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Fig. 1A PRIOR ART

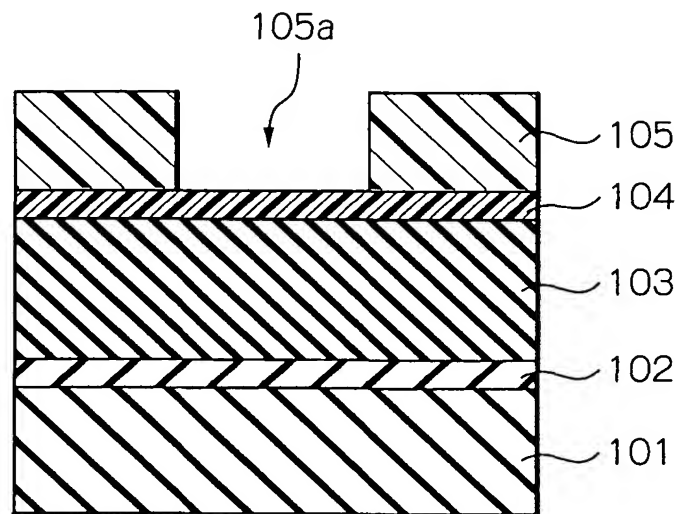
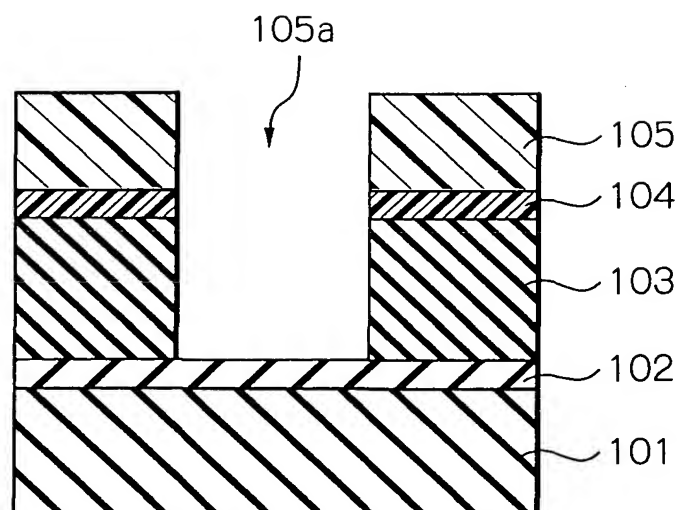


Fig. 1B PRIOR ART



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Fig. 1C PRIOR ART

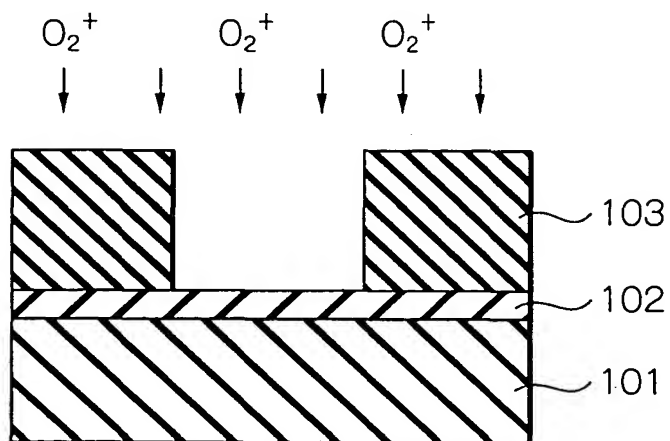
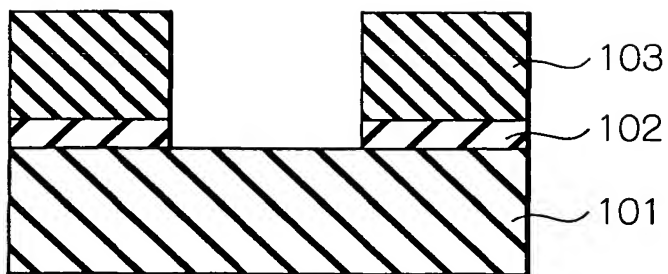


Fig. 1D PRIOR ART



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Fig. 1E PRIOR ART

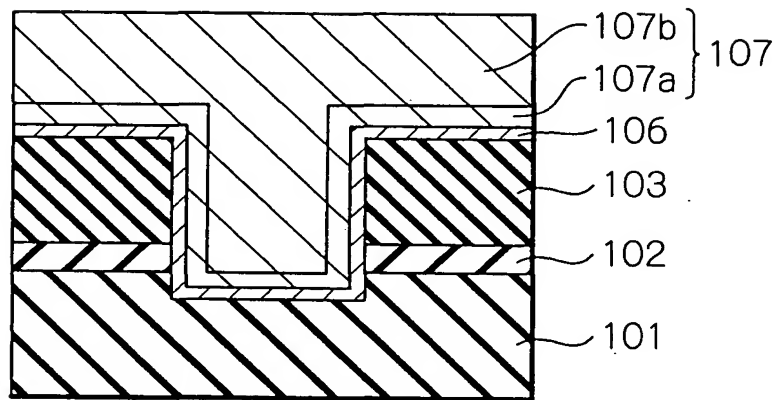
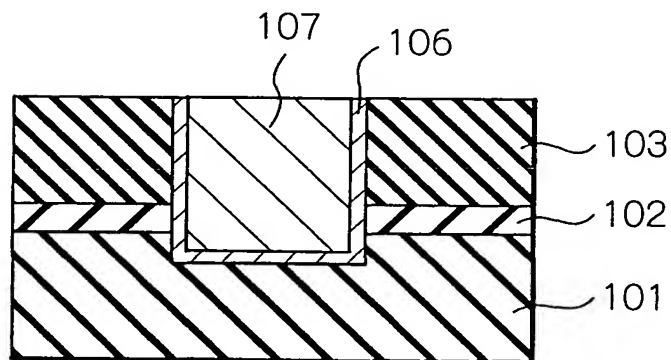


Fig. 1F PRIOR ART



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Fig. 1G PRIOR ART

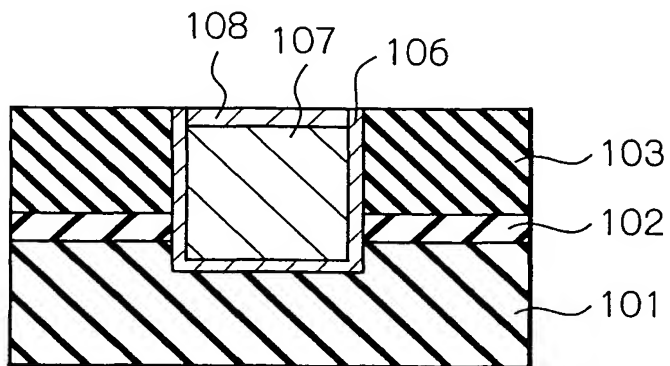


Fig. 1H PRIOR ART

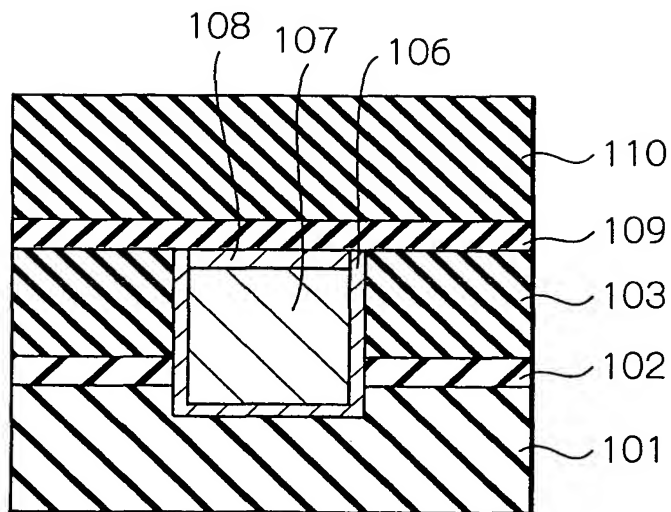


Fig. 2A PRIOR ART

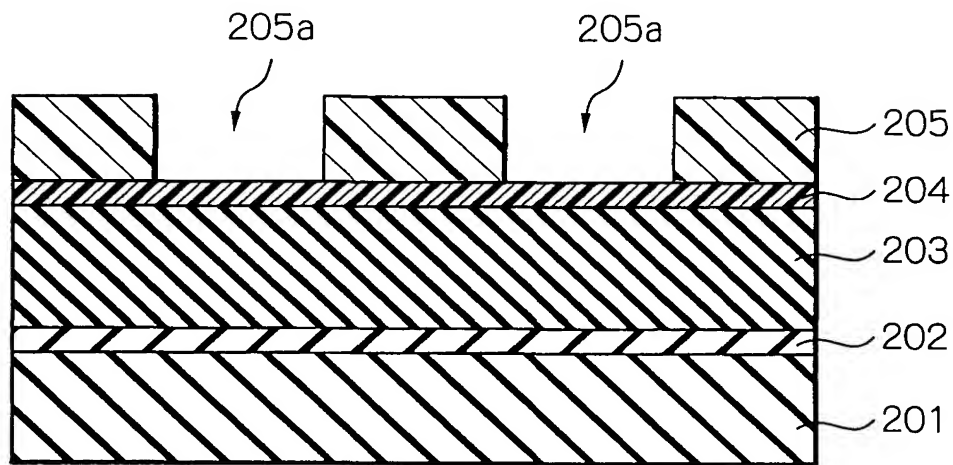


Fig. 2B PRIOR ART

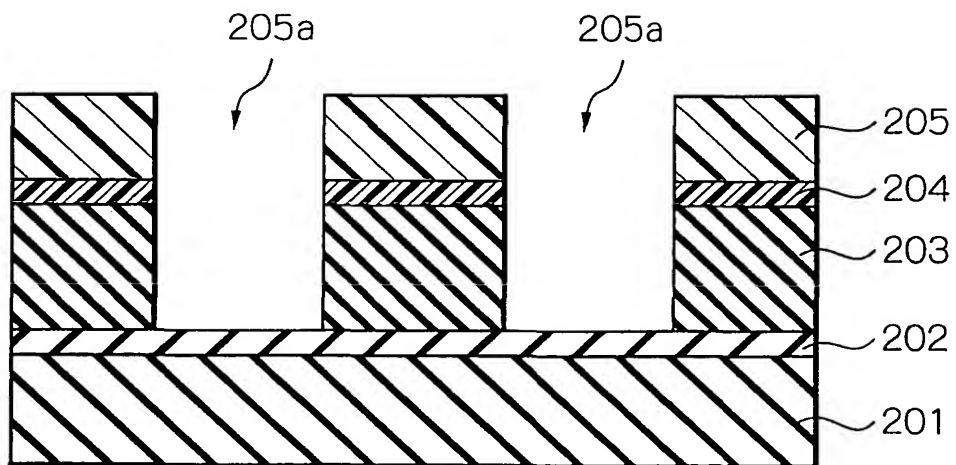


Fig. 2C PRIOR ART

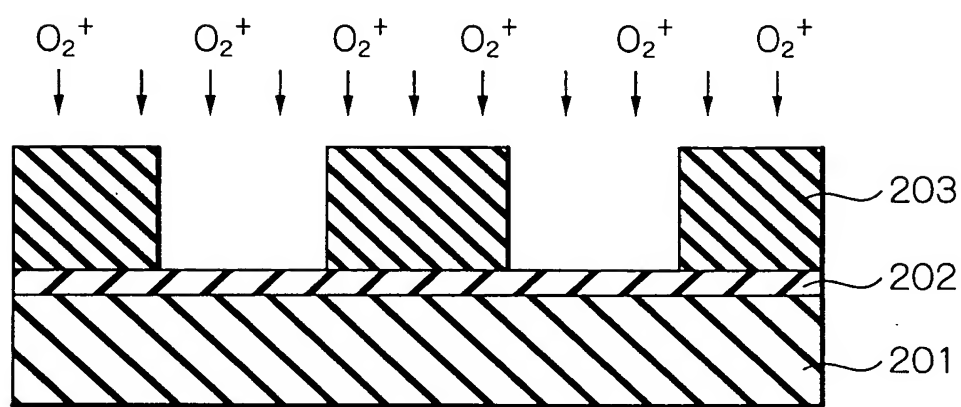


Fig. 2D PRIOR ART

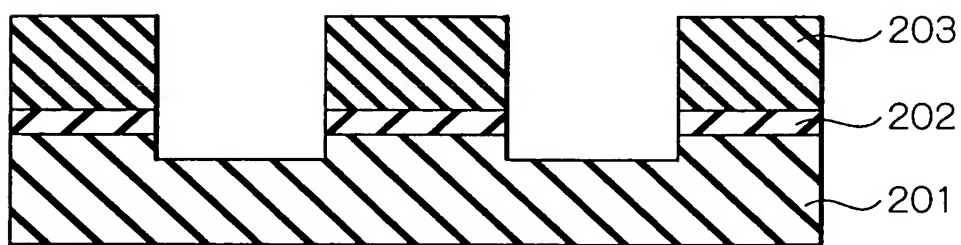


Fig. 2E PRIOR ART

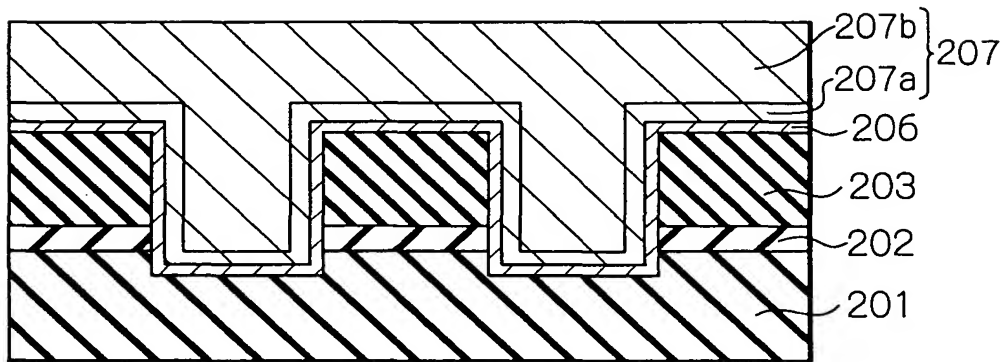
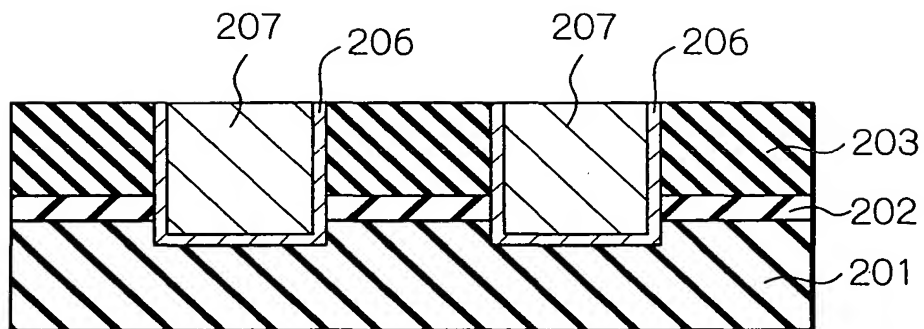


Fig. 2F PRIOR ART



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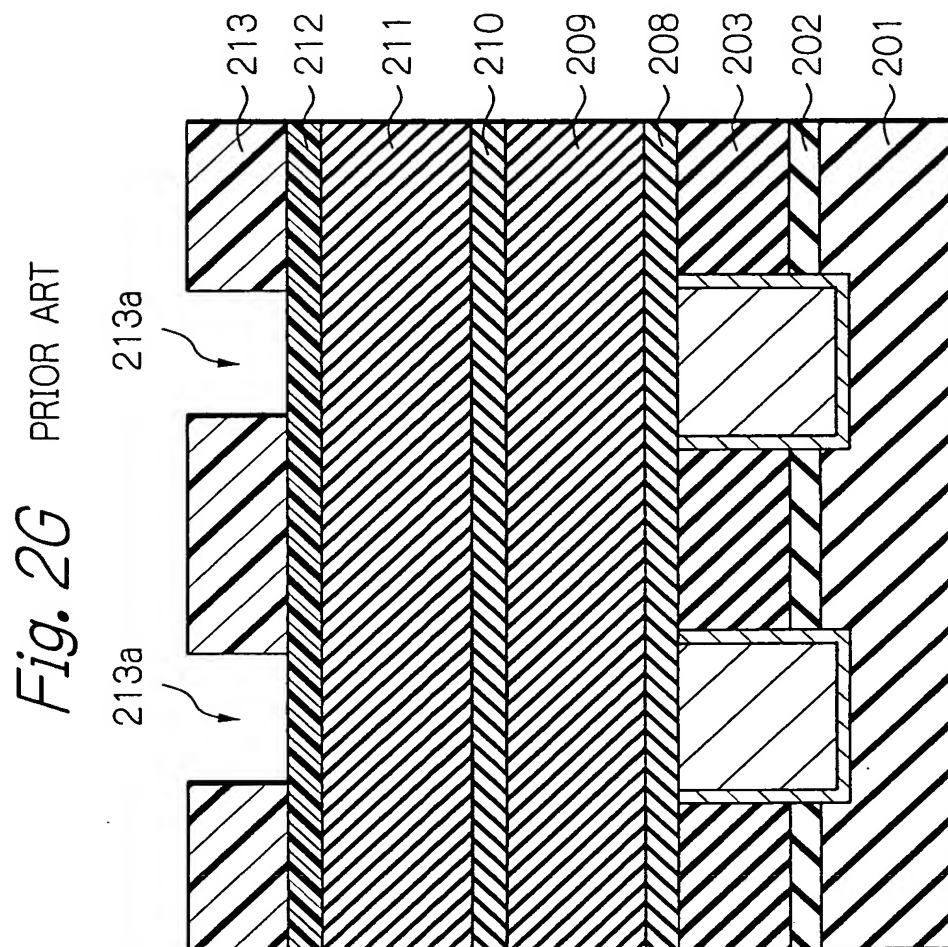
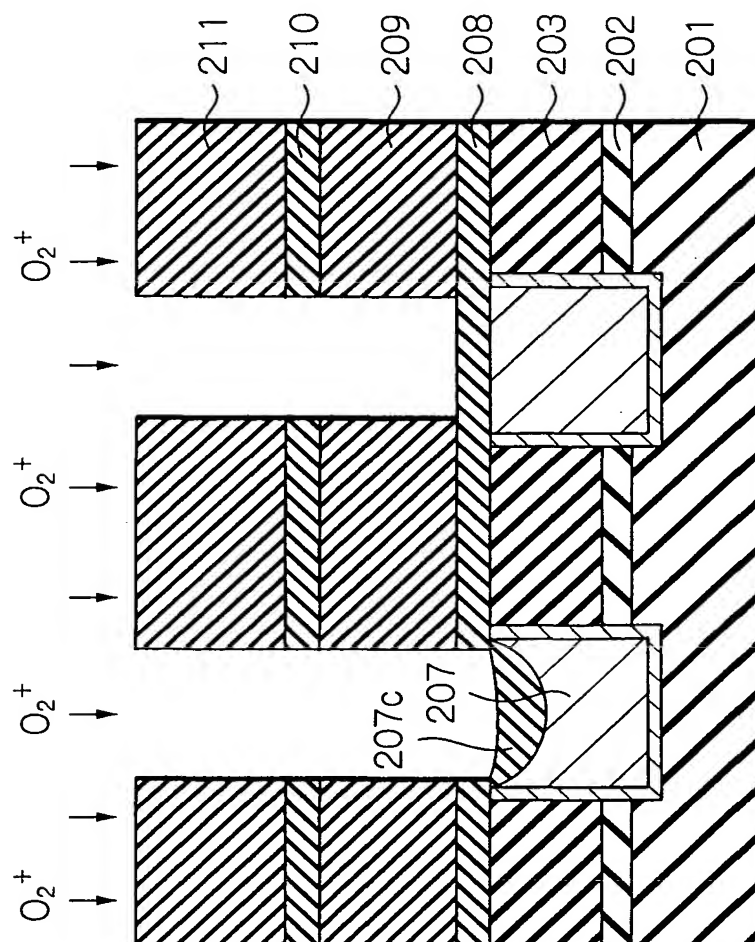
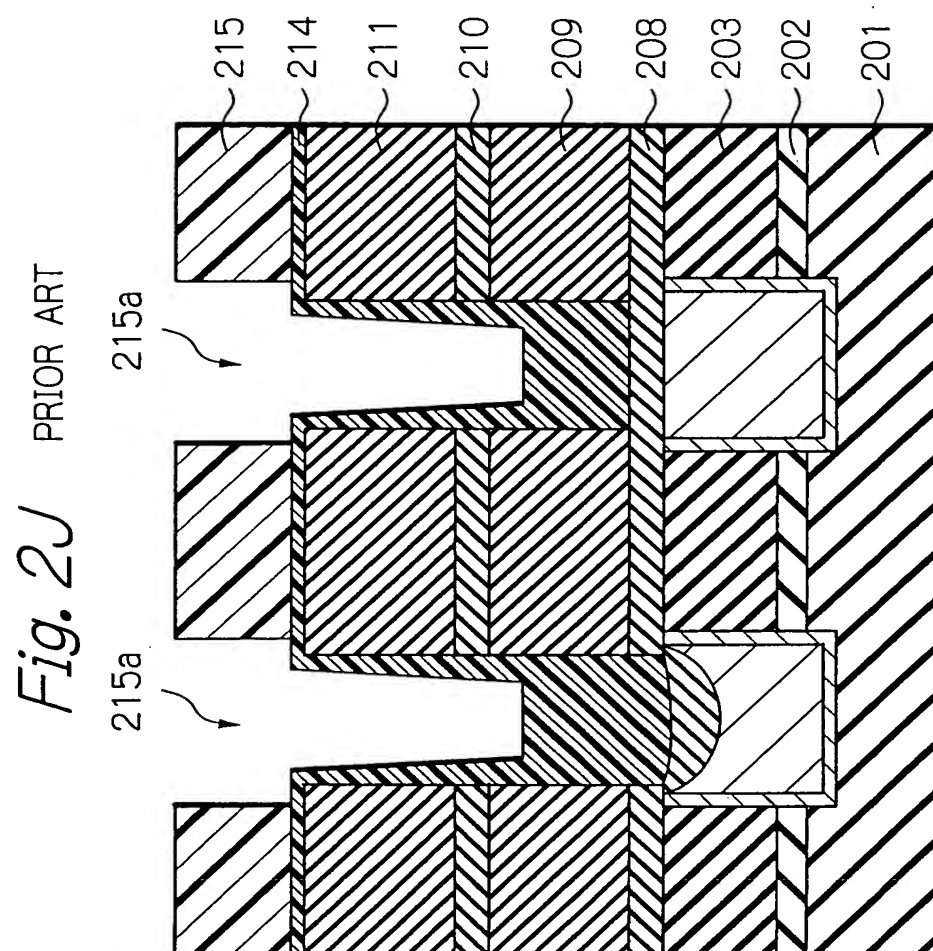




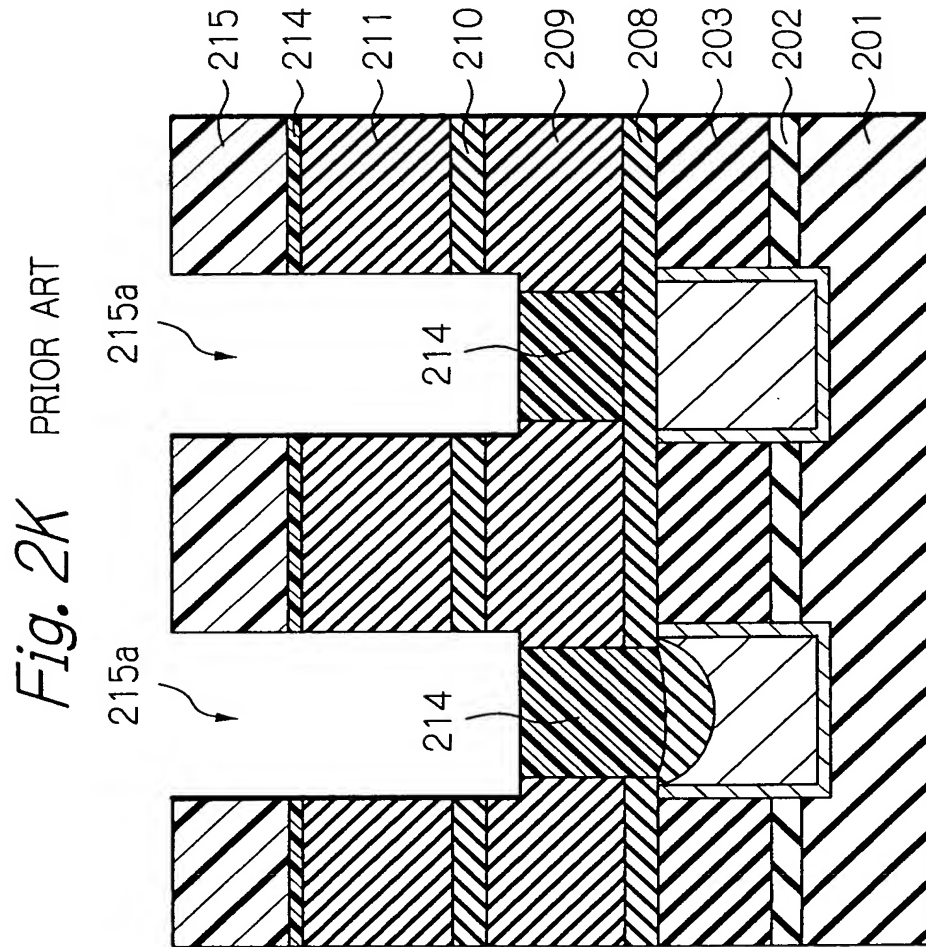
Fig. 2I



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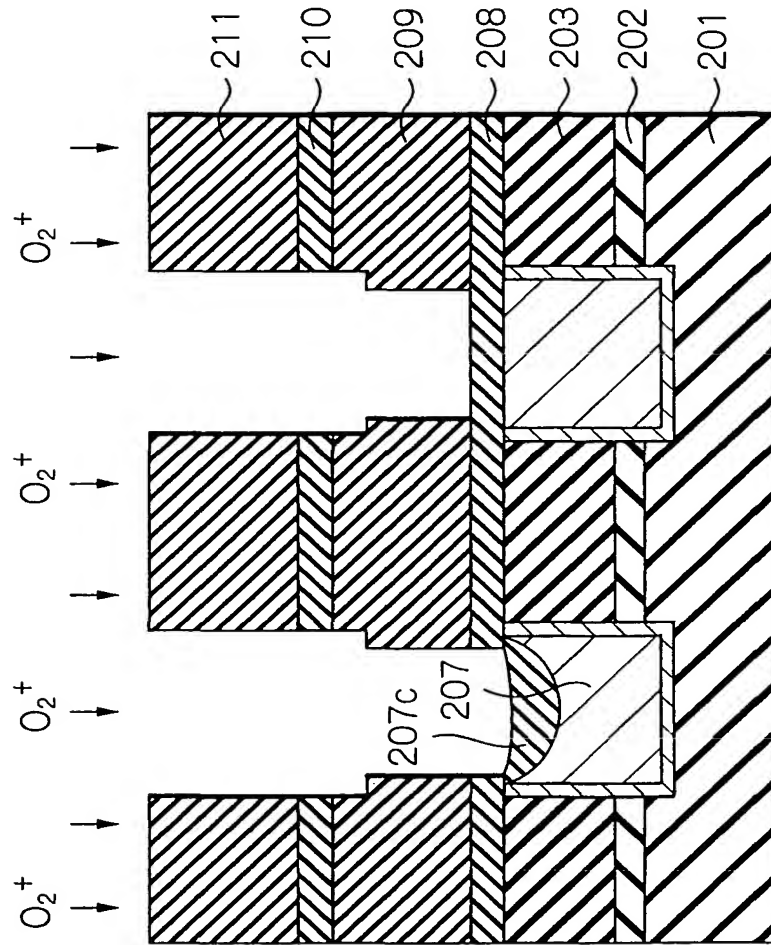


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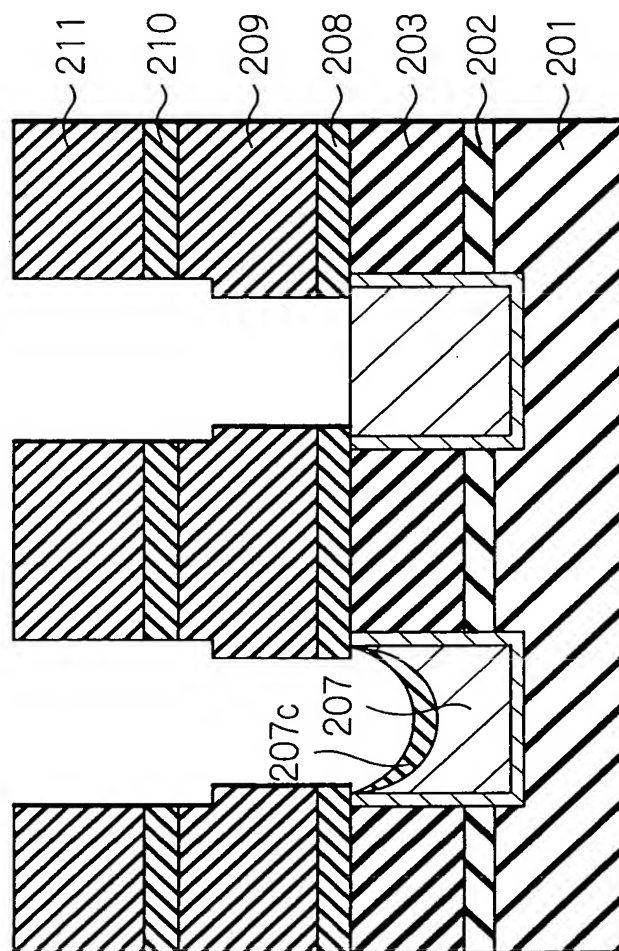
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Fig. 2L PRIOR ART

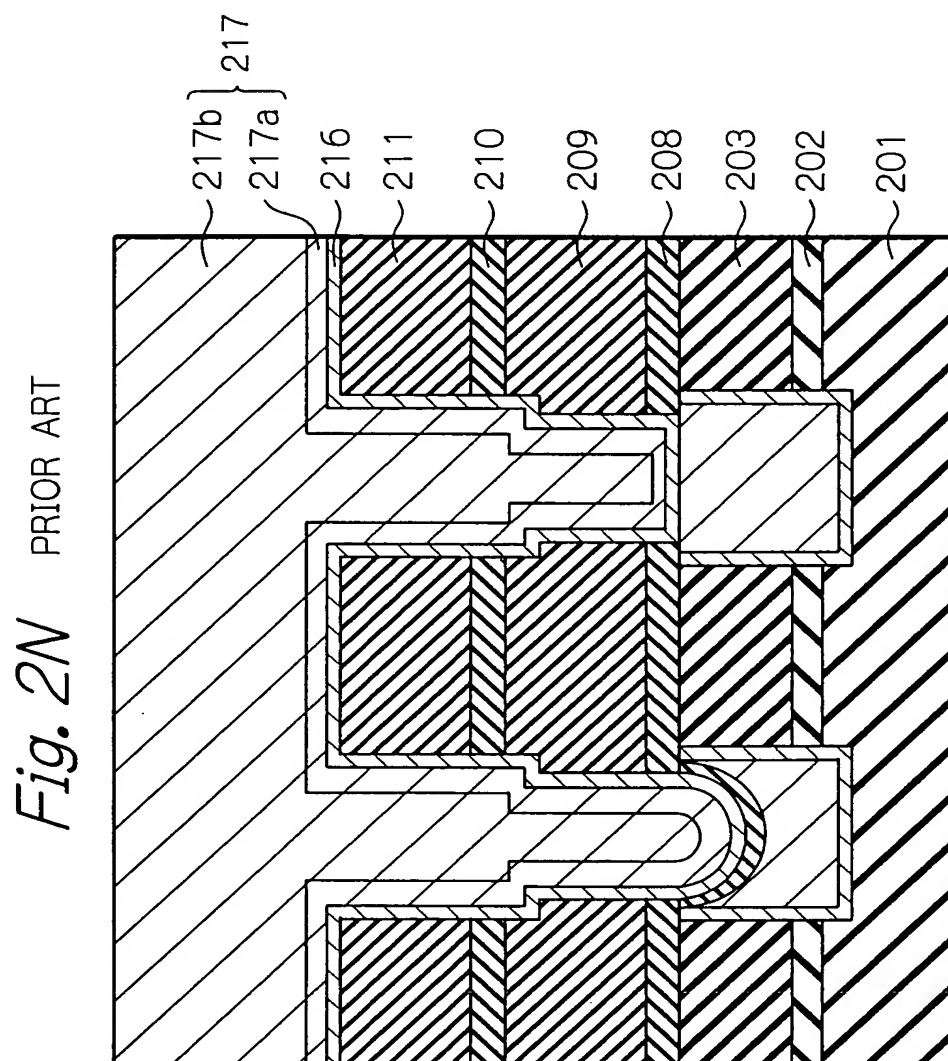


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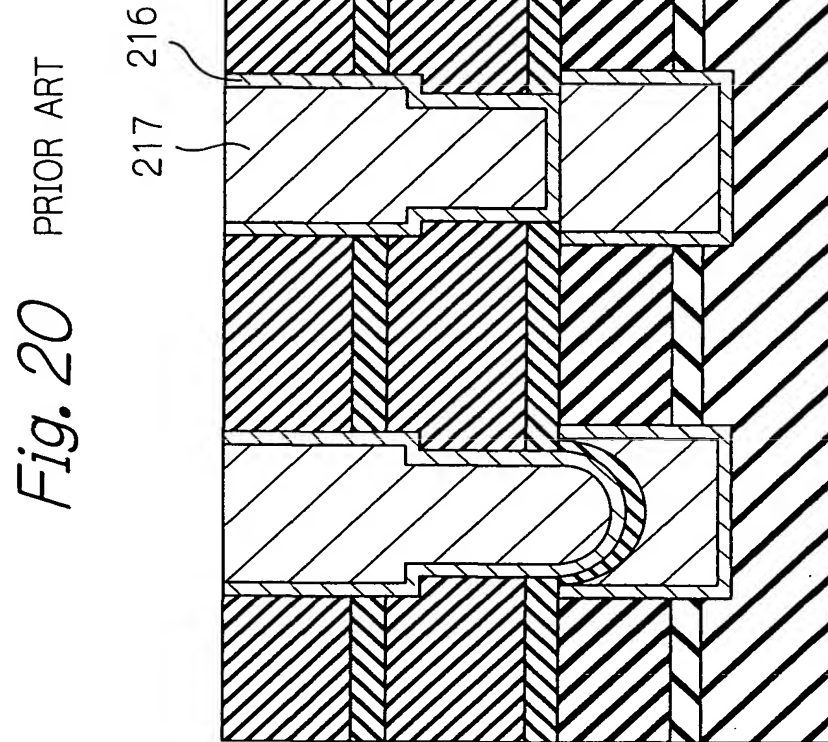
Fig. 2M PRIOR ART



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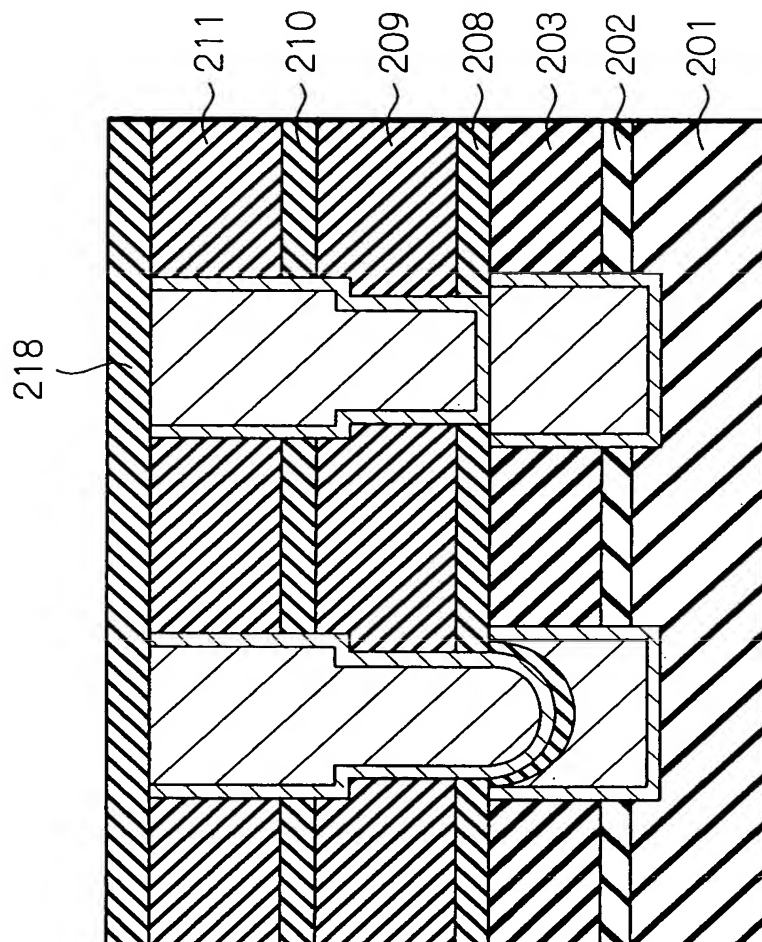


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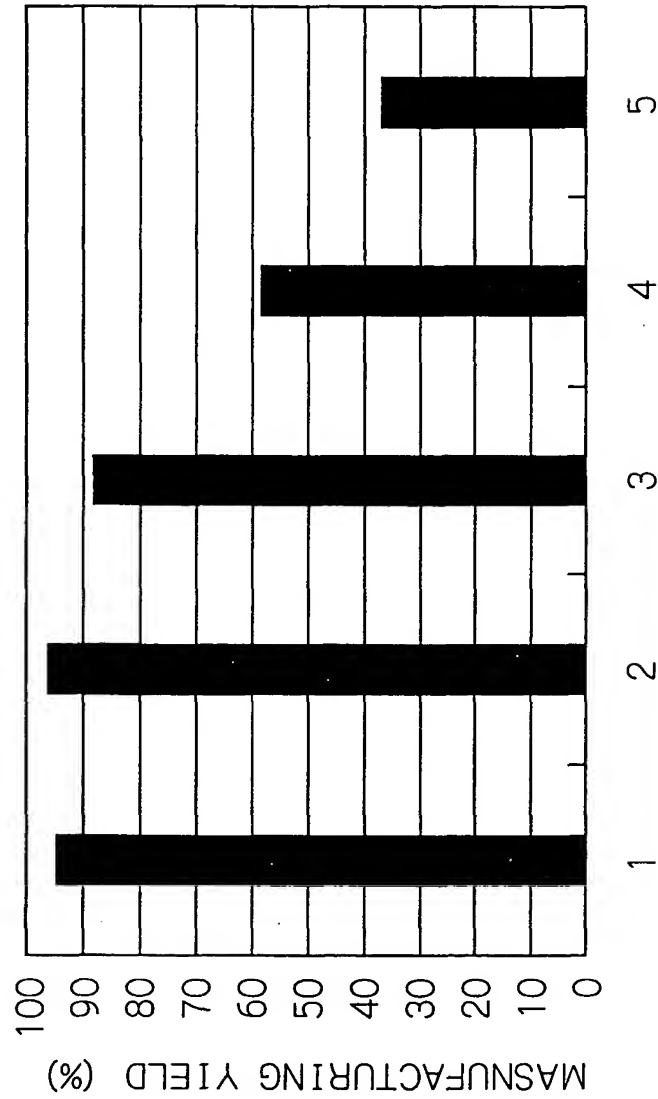
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Fig. 2P PRIOR ART



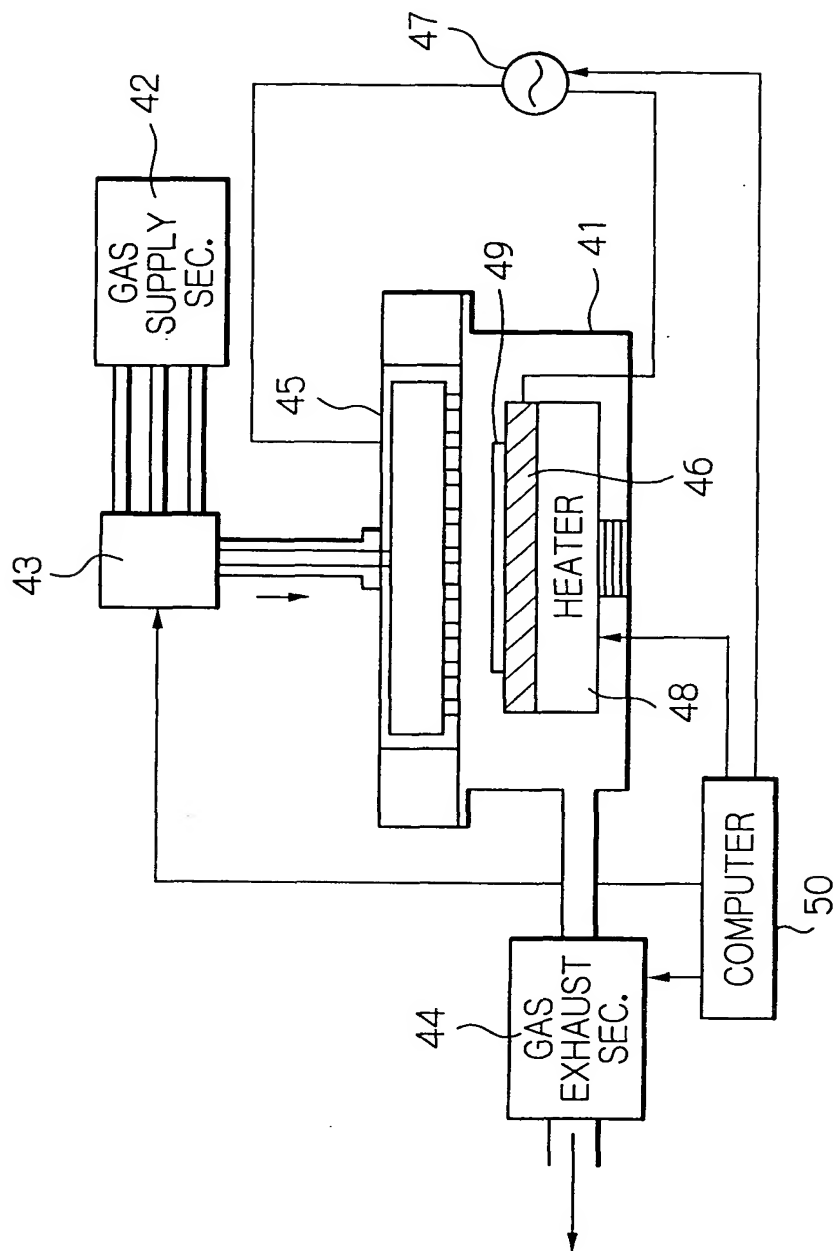
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Fig. 3 PRIOR ART



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Fig. 4 PRIOR ART



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Fig. 5A

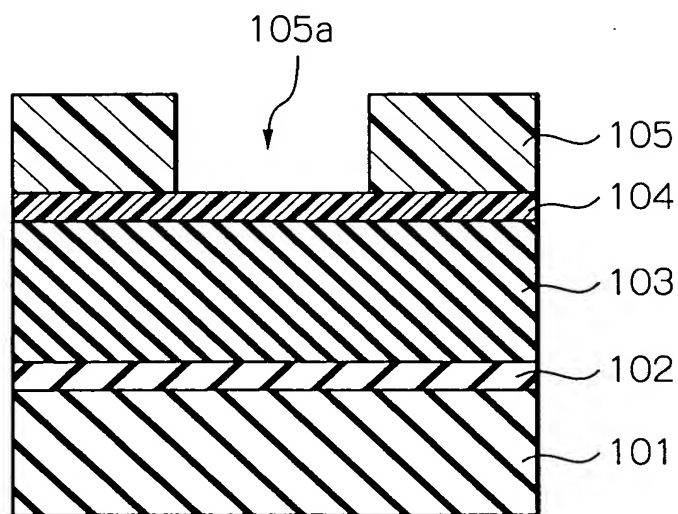
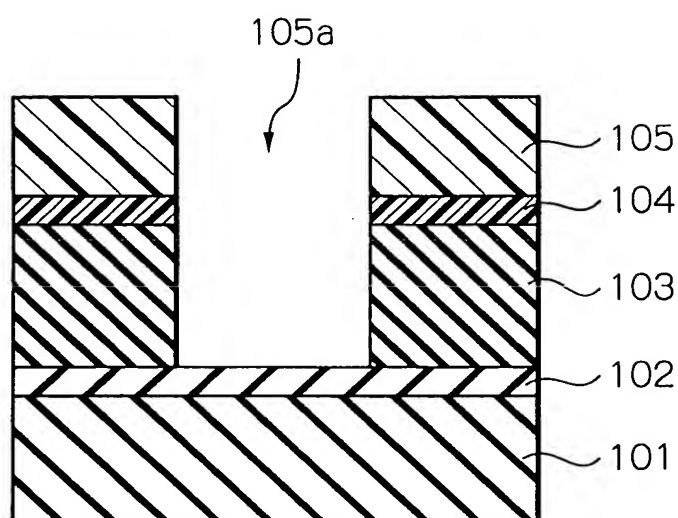


Fig. 5B



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Fig. 5C

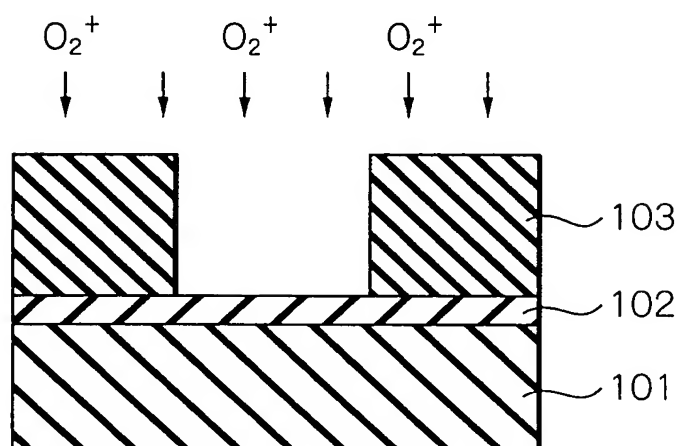
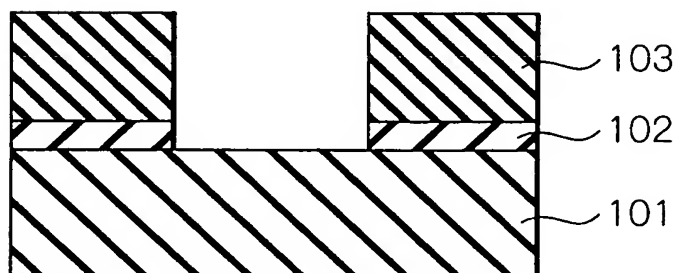


Fig. 5D



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Fig. 5E

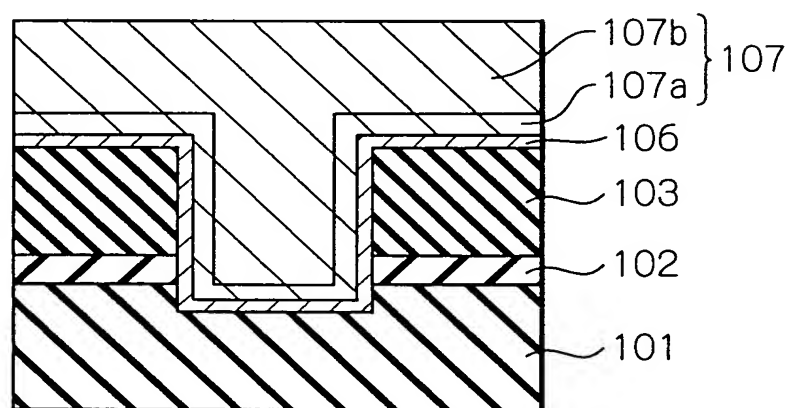
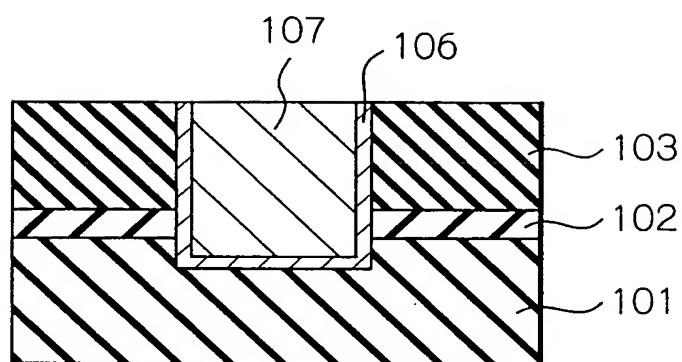


Fig. 5F



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Fig. 5G

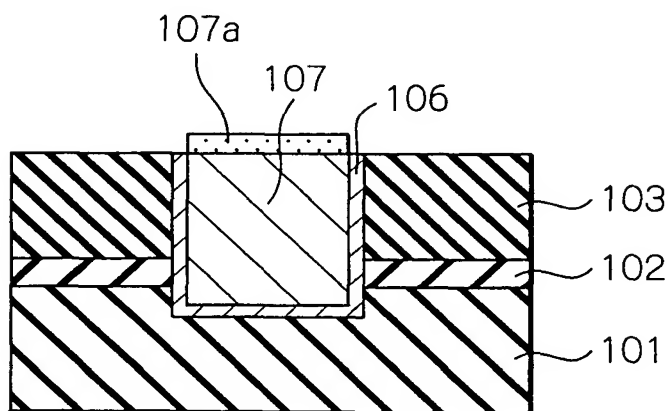
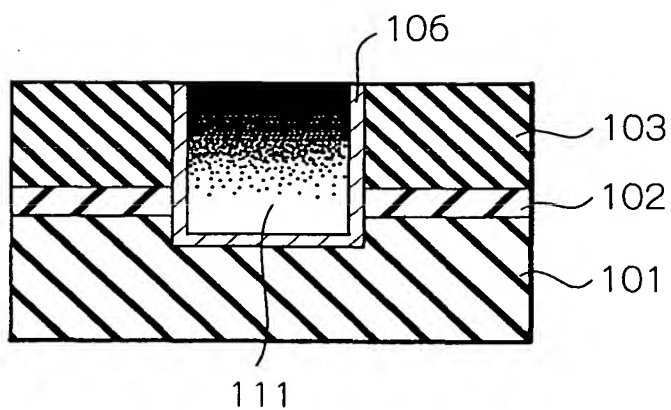


Fig. 5H



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Fig. 5I

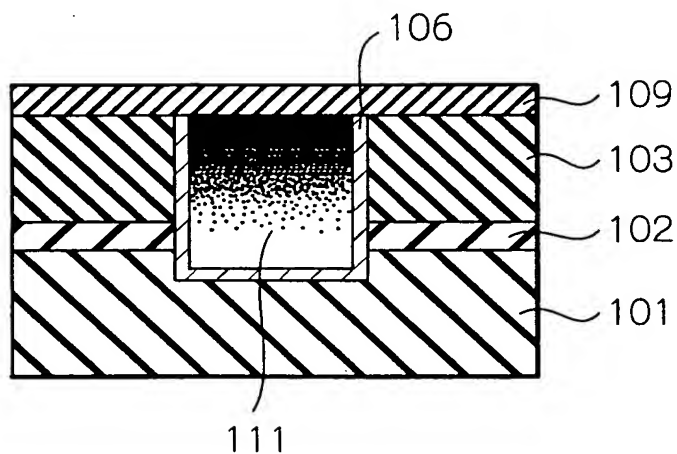
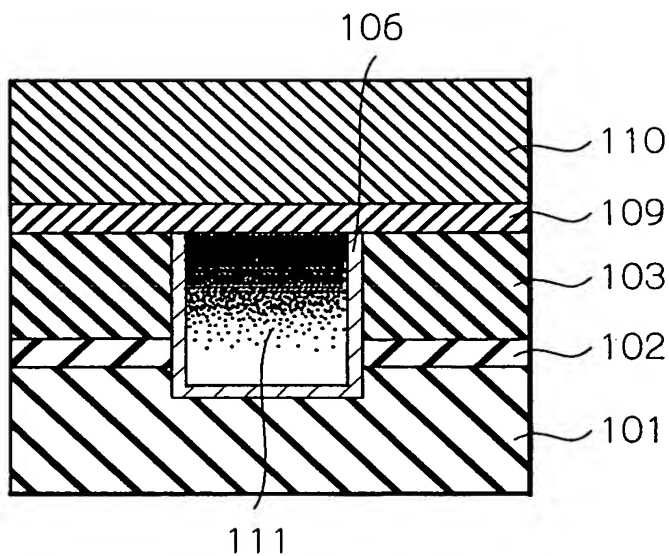
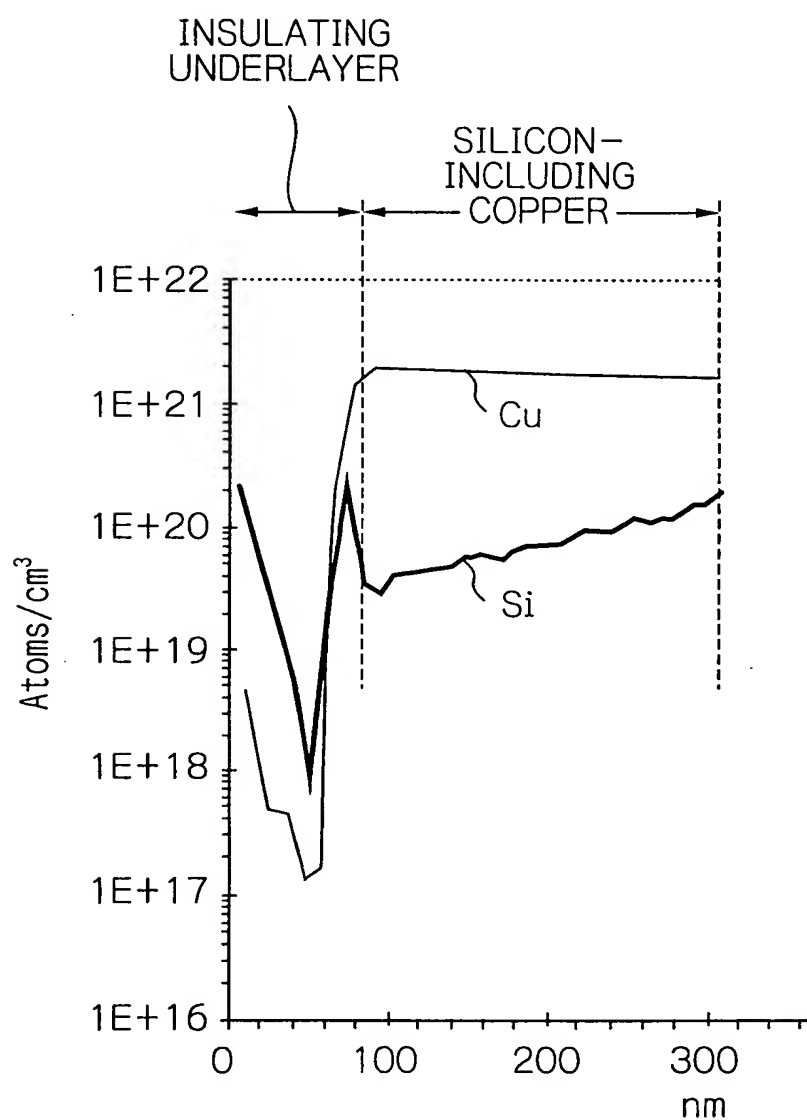


Fig. 5J



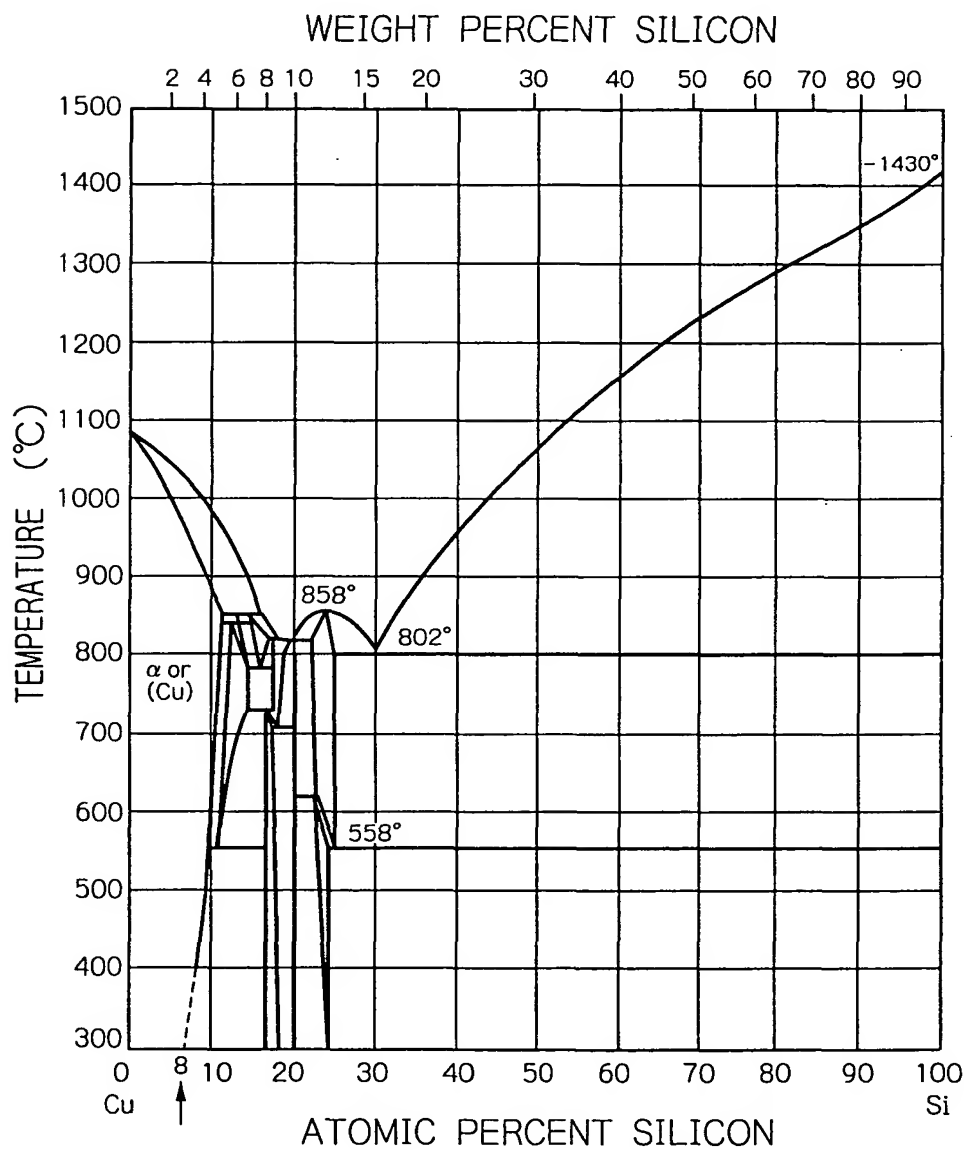
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Fig. 6



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Fig. 7



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Fig. 8A

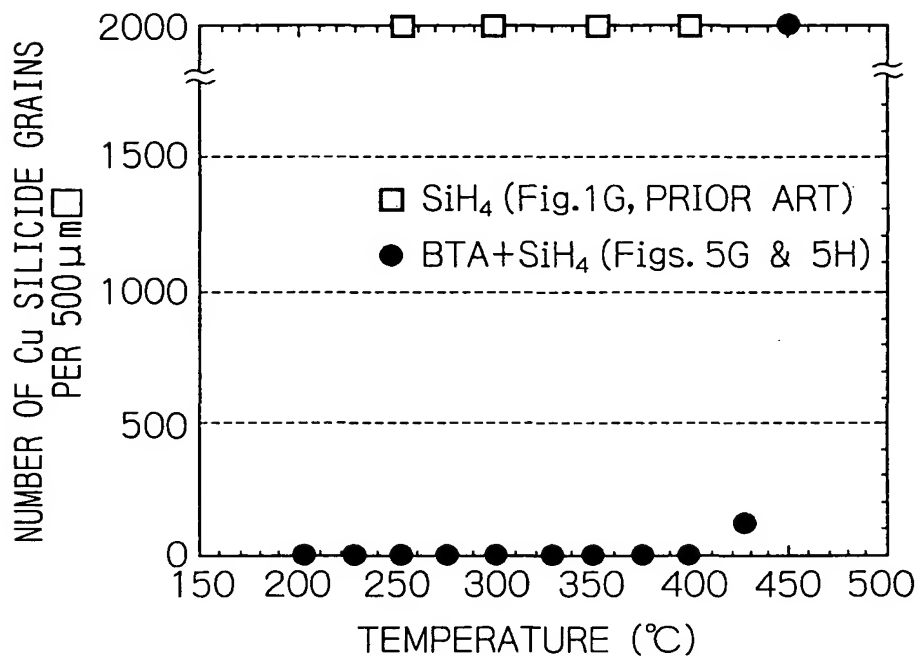
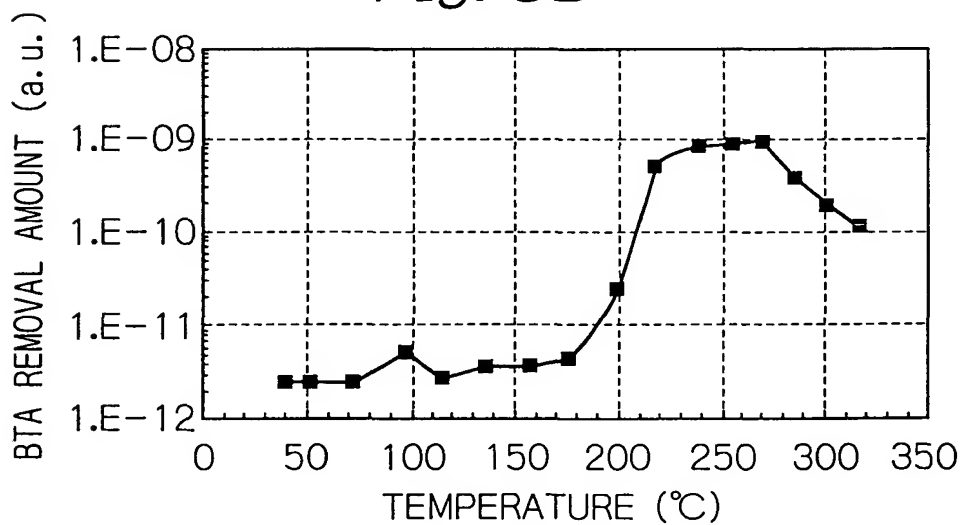


Fig. 8B



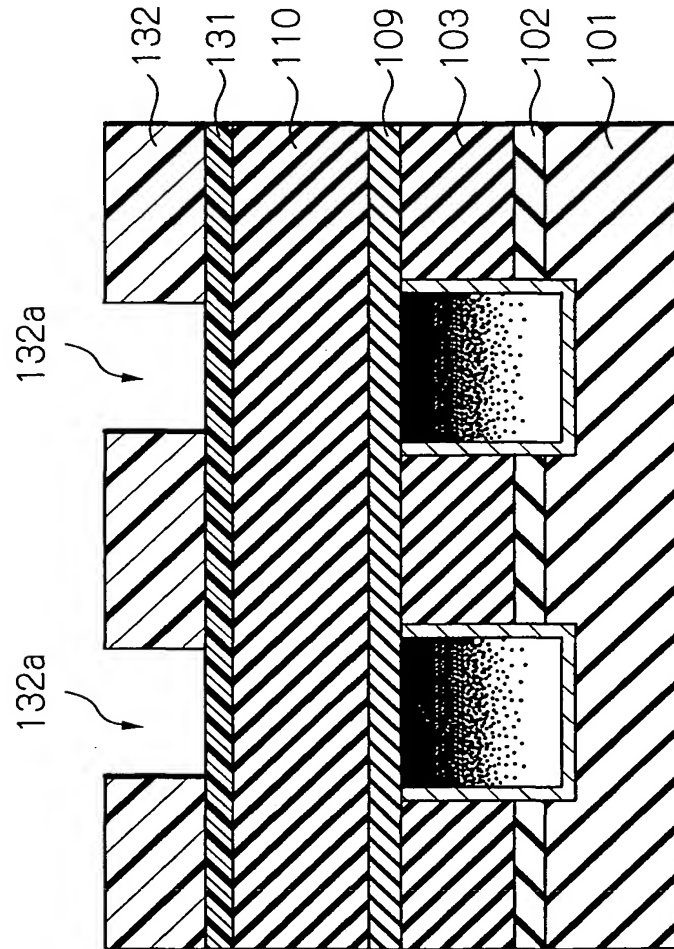
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Fig. 8C

TEMPERATURE (°C)	200	225	250	300	350	400
LAYER 111	ABSENCE OF Si	ABSENCE OF Si	PRESENCE OF Si	PRESENCE OF Si	PRESENCE OF Si	PRESENCE OF Si

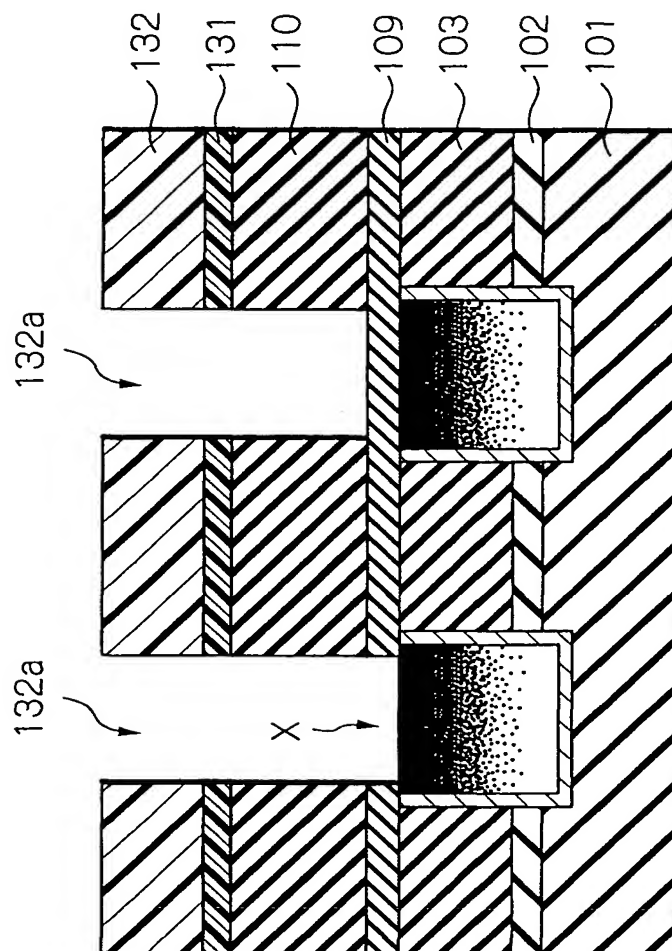
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Fig. 9A



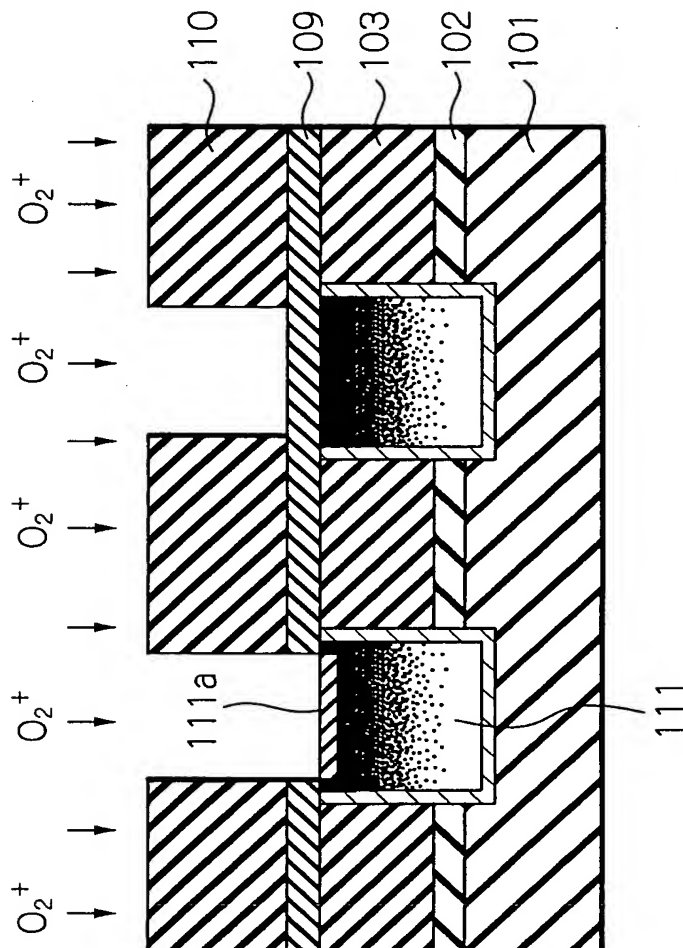
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Fig. 9B



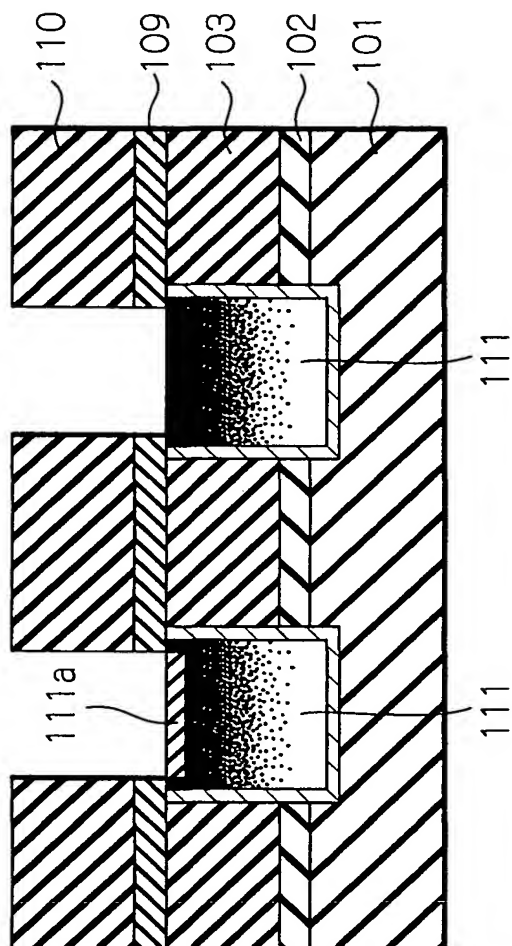
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Fig. 9C



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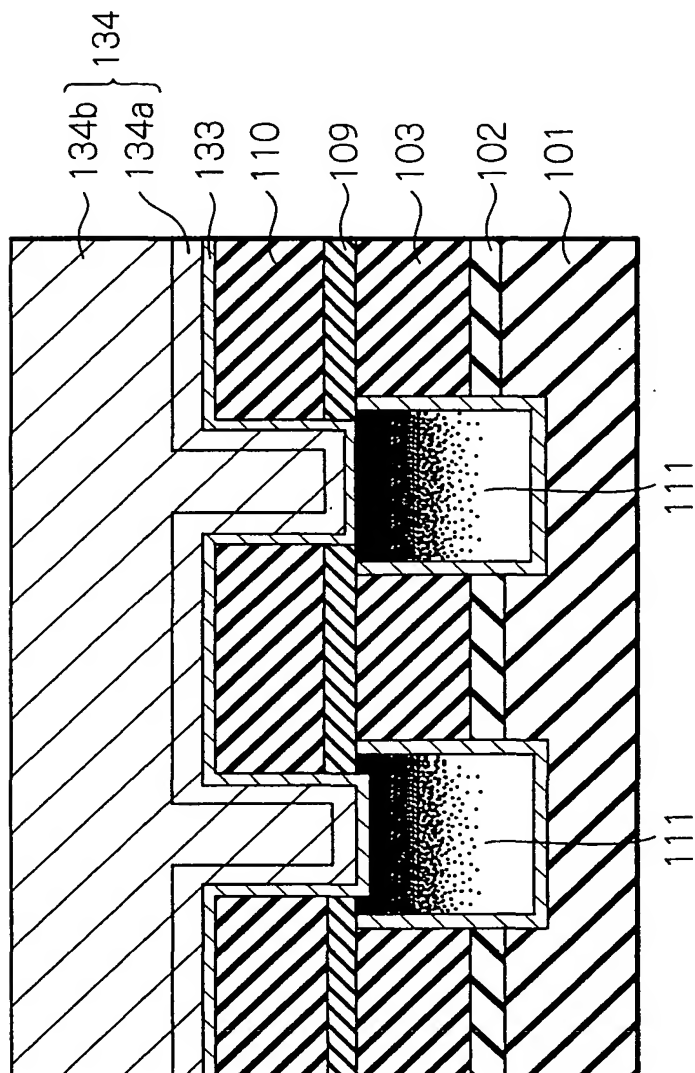
Fig. 9D





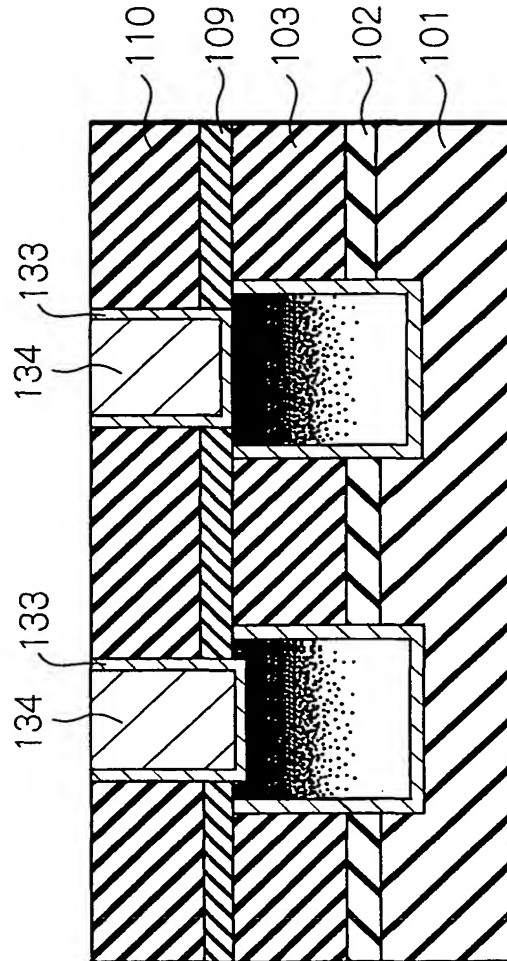
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Fig. 9F



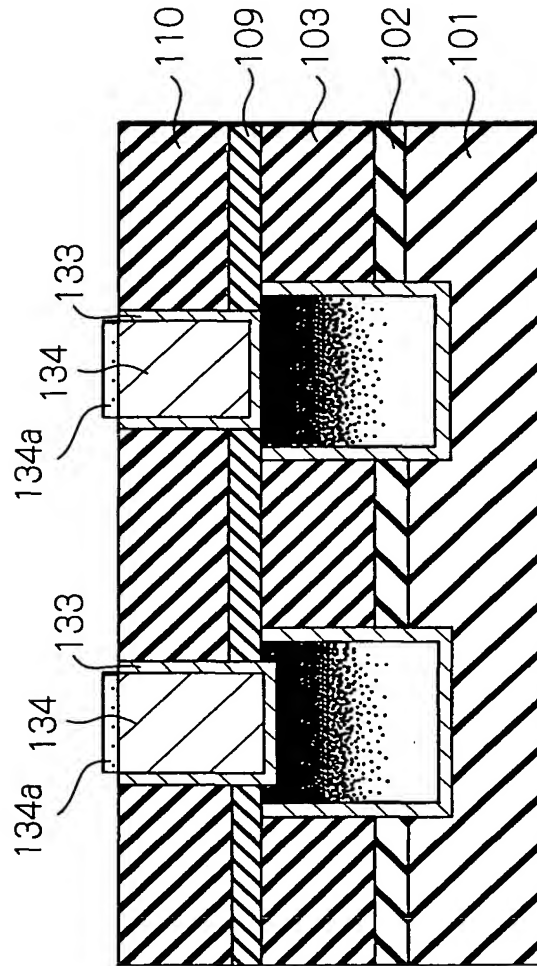
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Fig. 9G



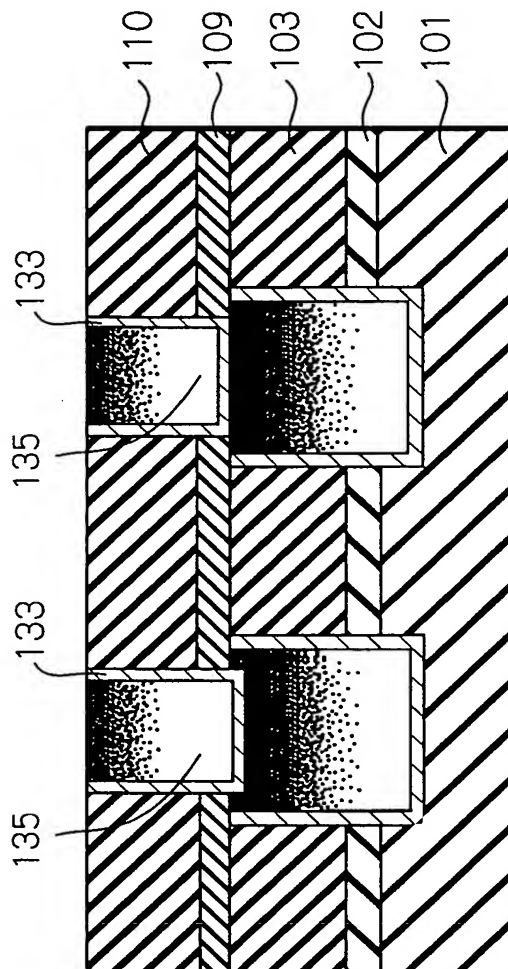
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Fig. 9H



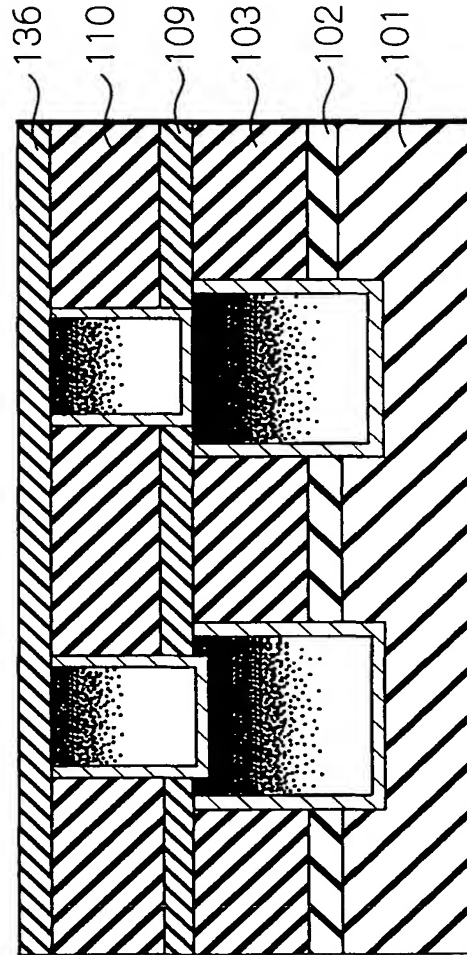
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Fig. 9I



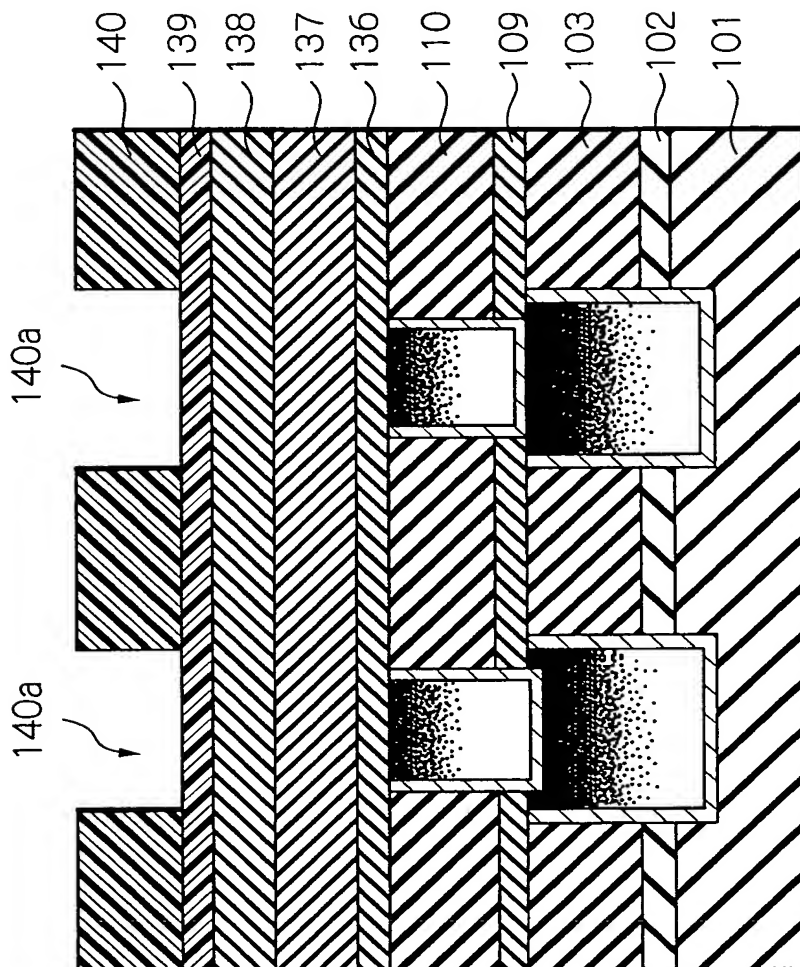
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Fig. 9J



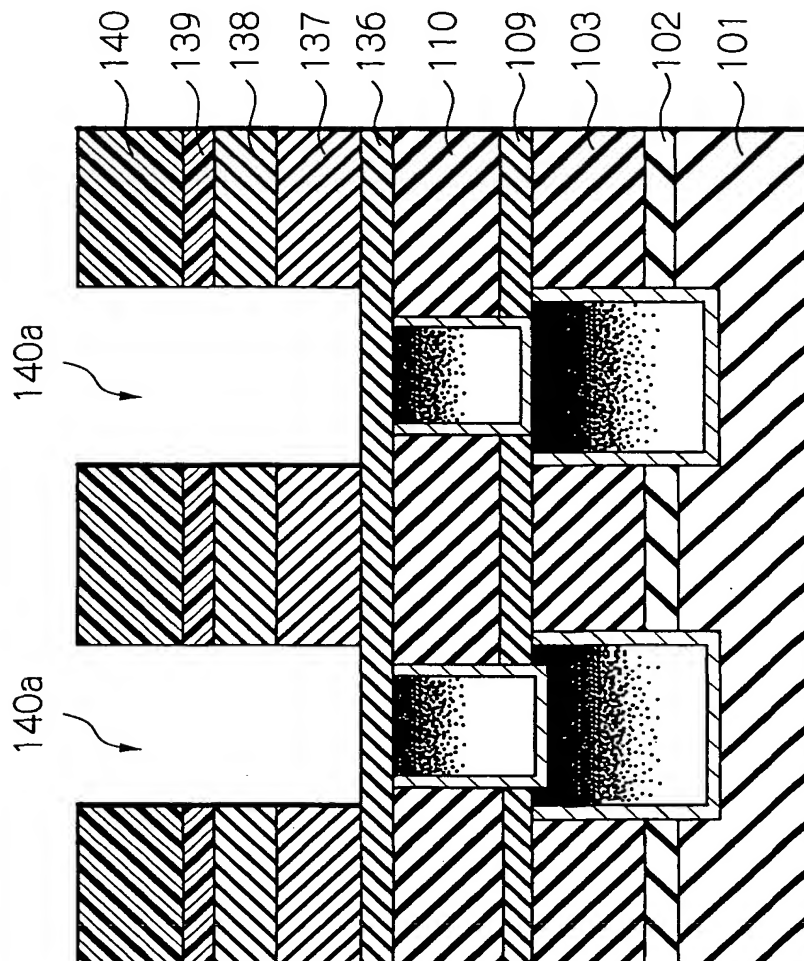
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Fig. 9K



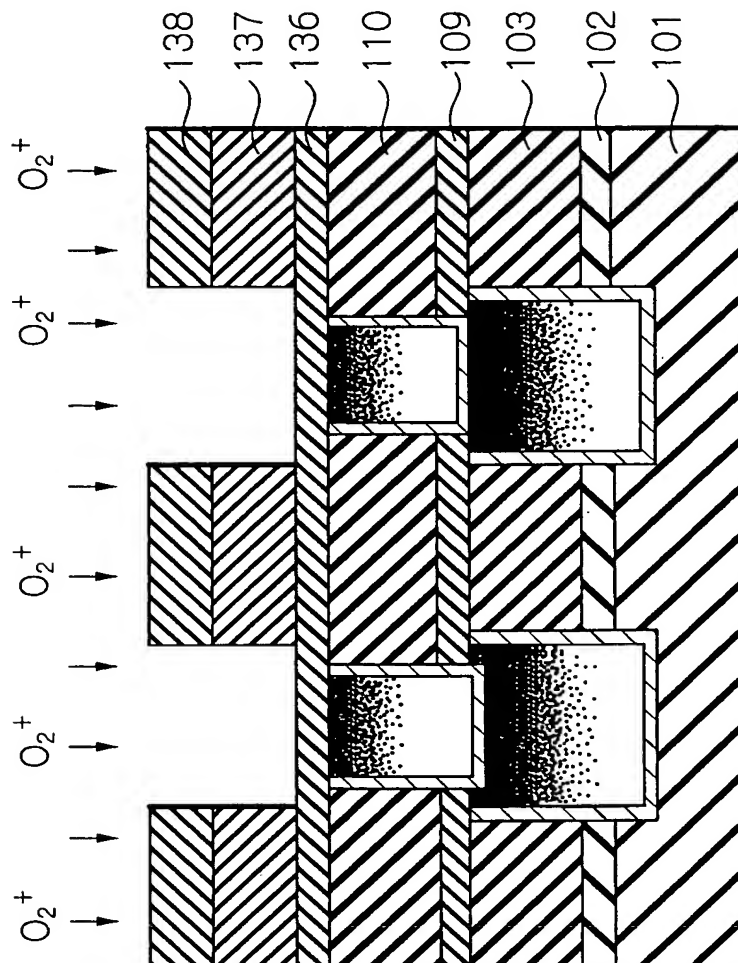
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Fig. 9L



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 /
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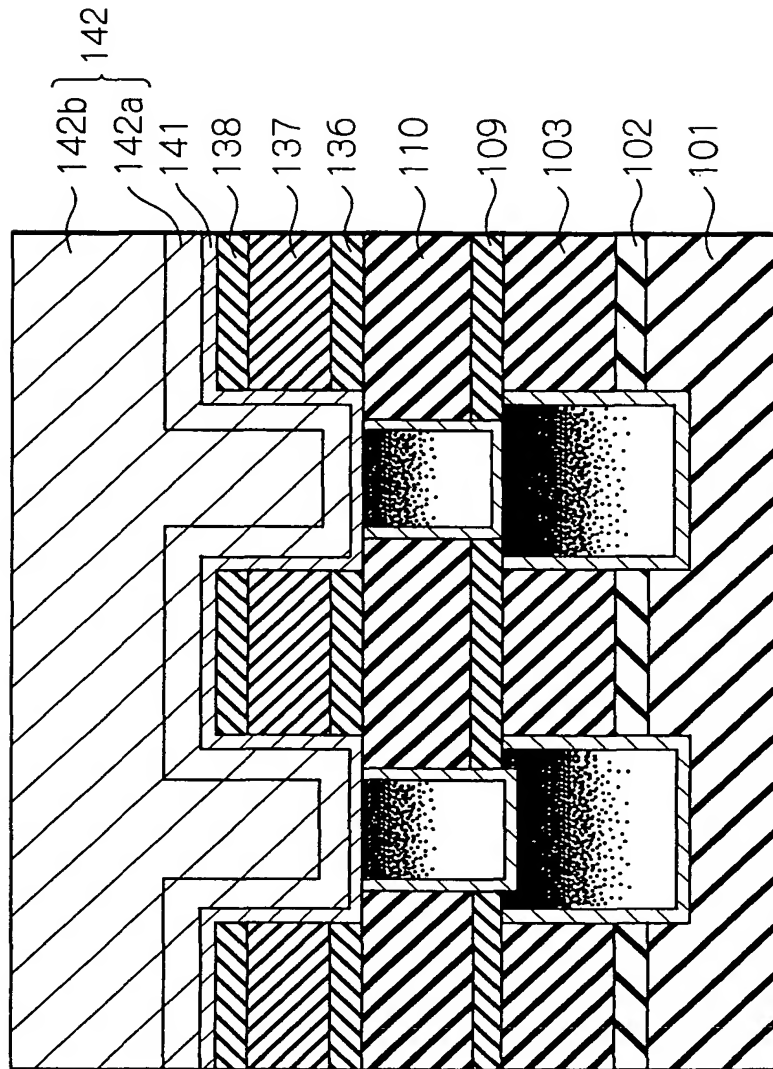
Fig. 9M



[illegible]

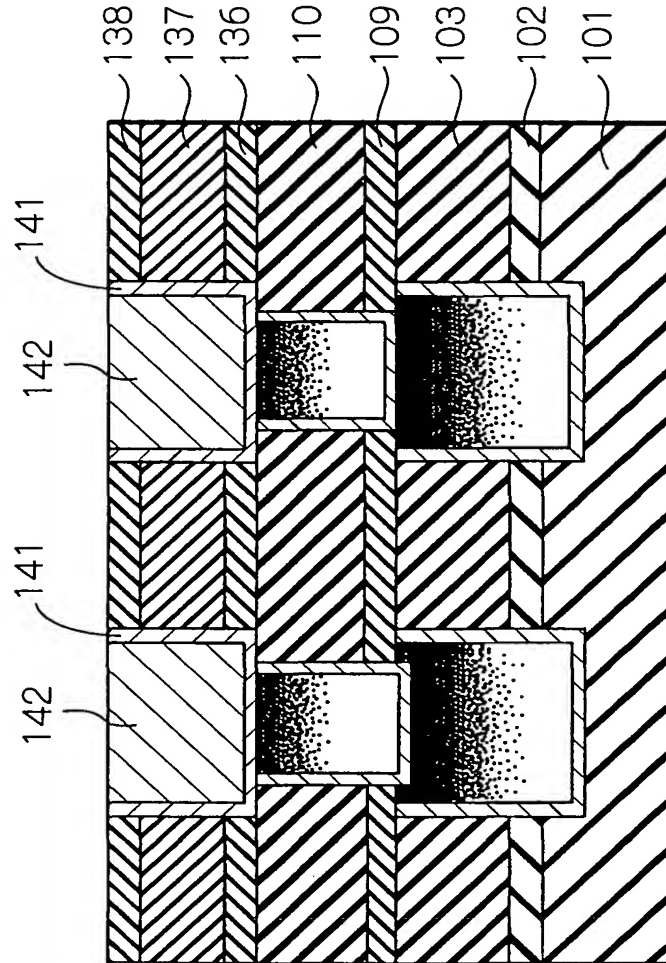
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Fig. 90



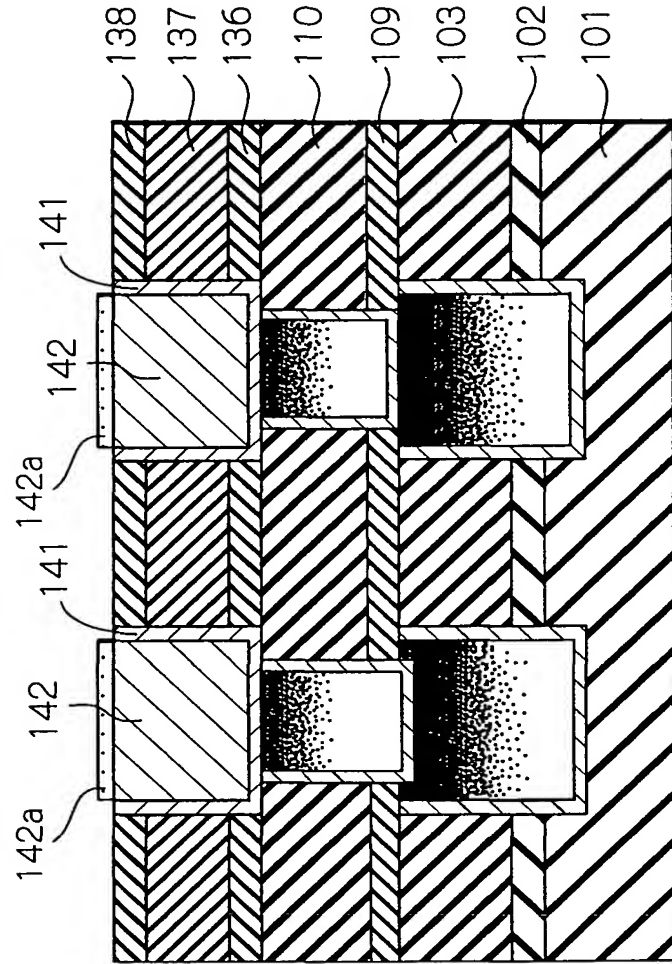
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/ 87

Fig. 9P



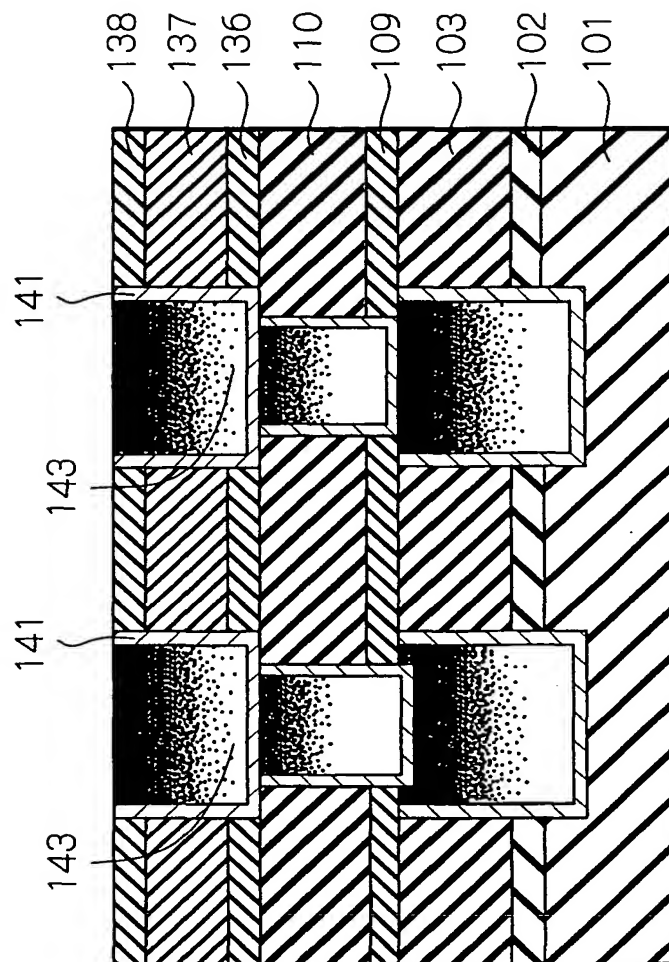
45/
87

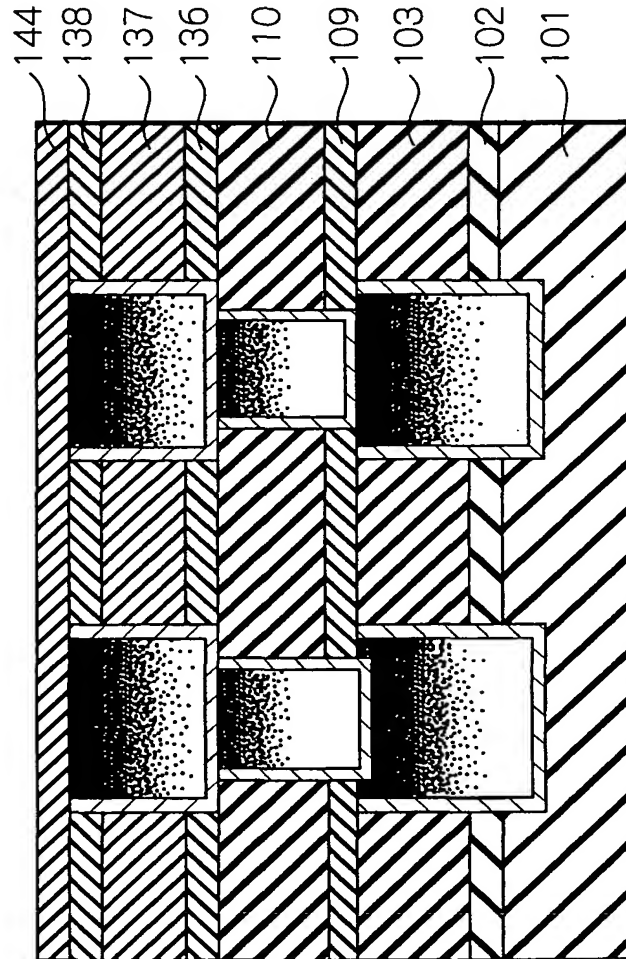
Fig. 9Q



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Fig. 9R





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Fig. 10A

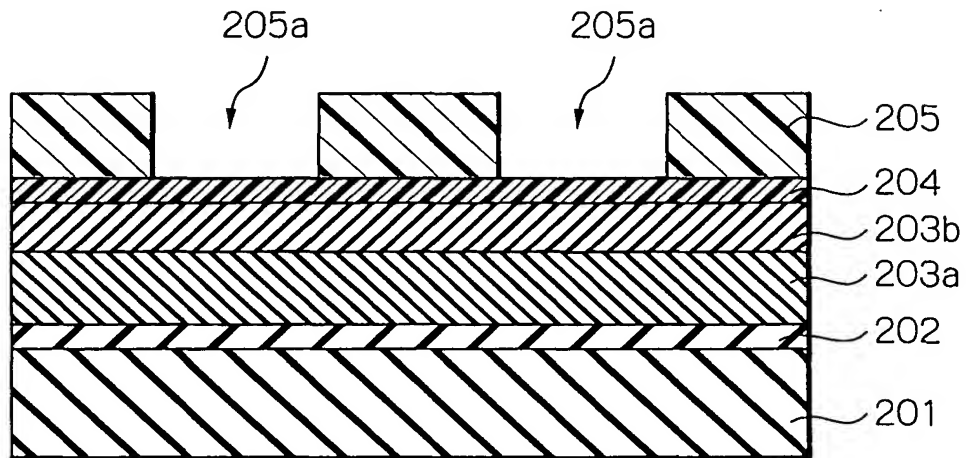
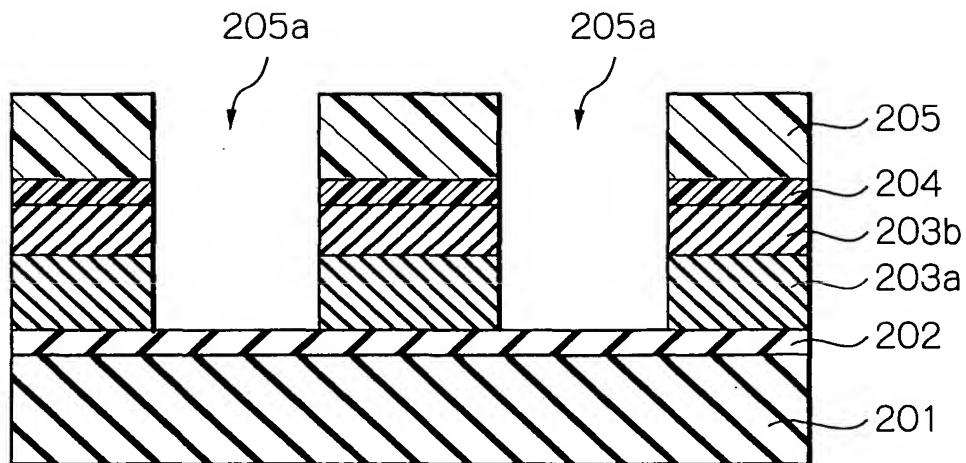


Fig. 10B



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Fig. 10C

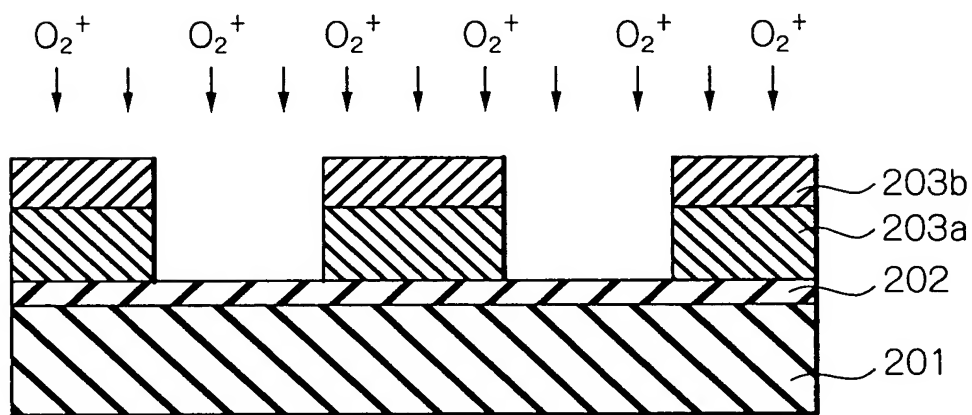
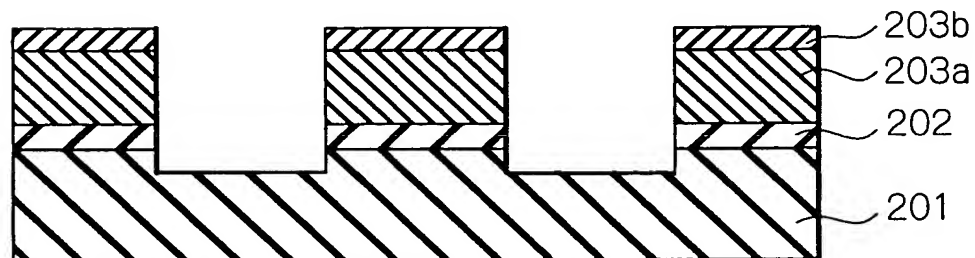


Fig. 10D



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Fig. 10E

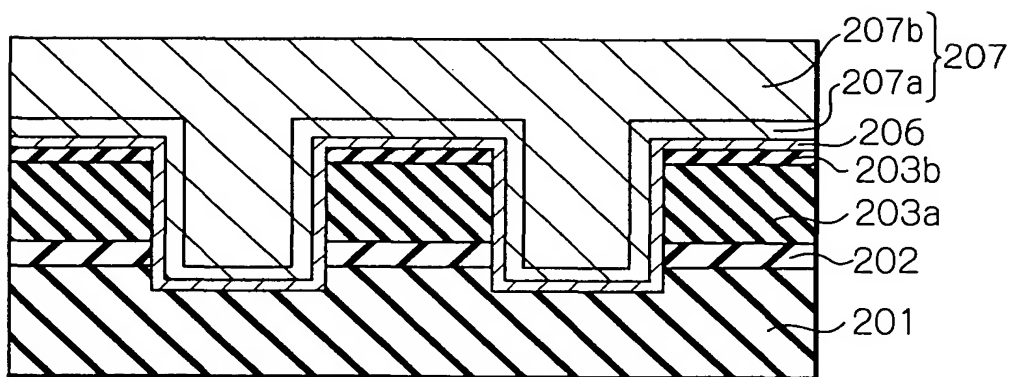
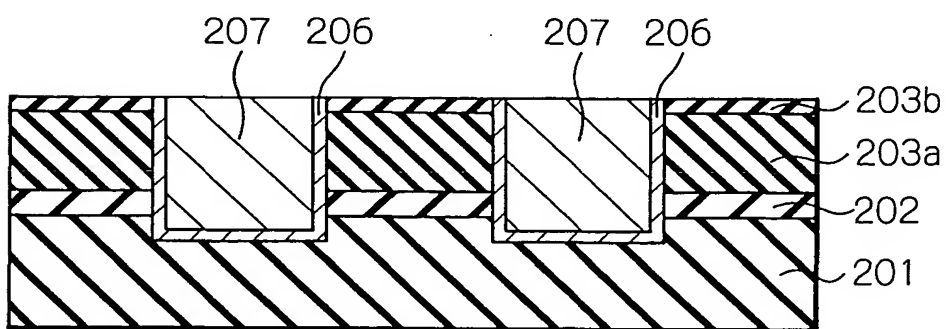


Fig. 10F



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Fig. 10G

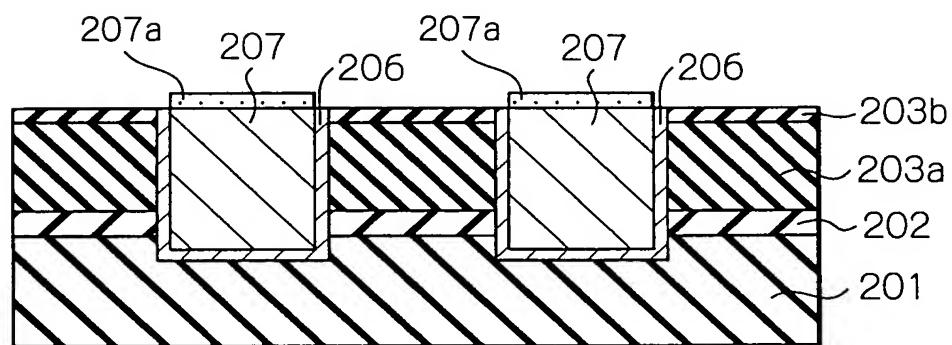
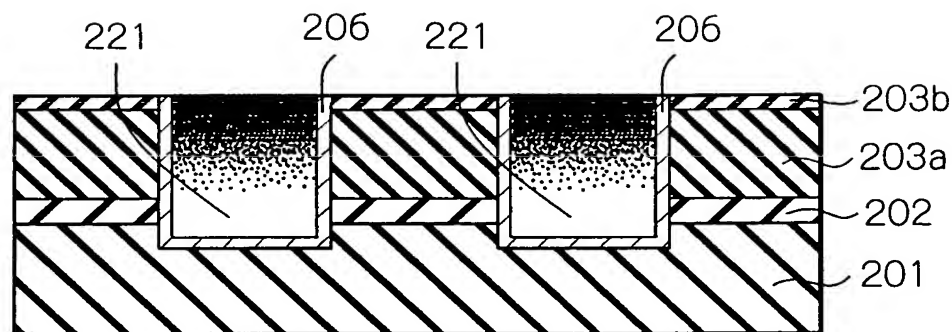
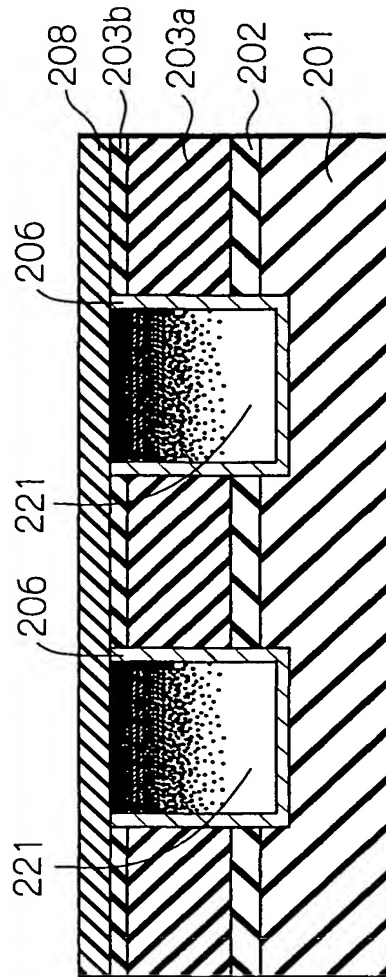


Fig. 10H

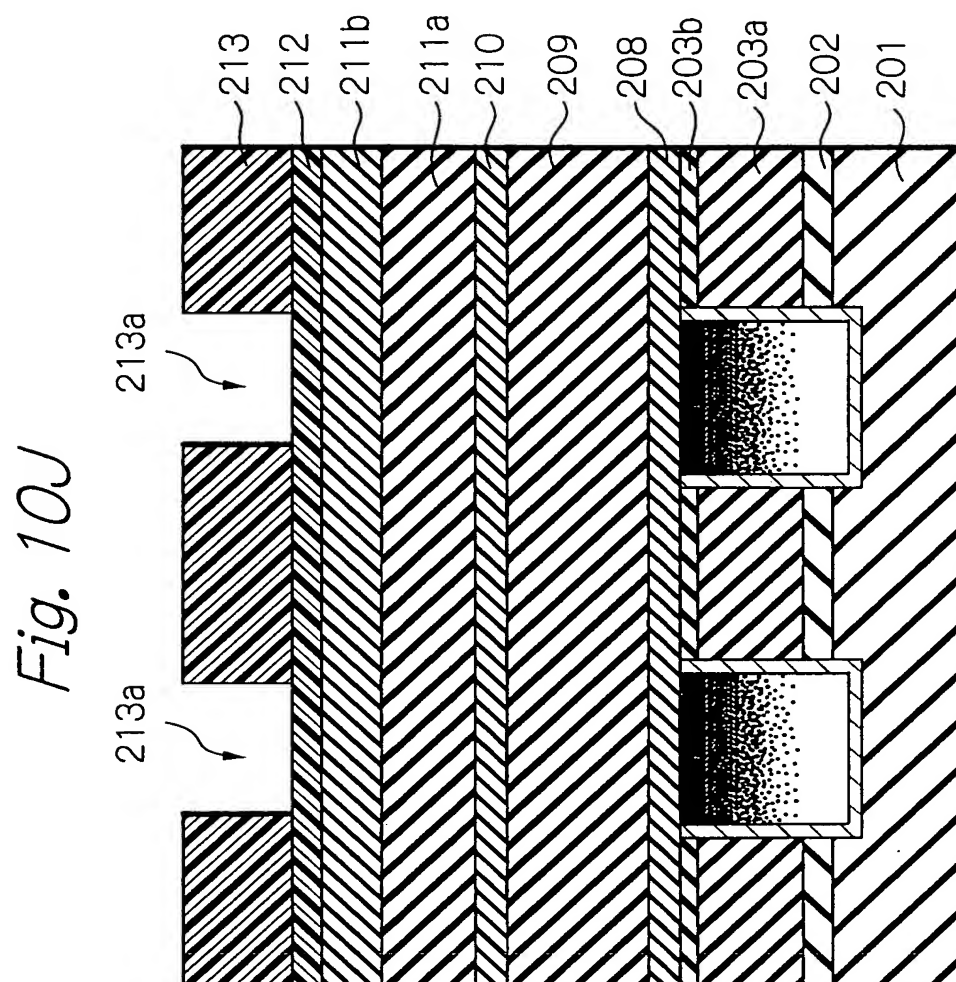


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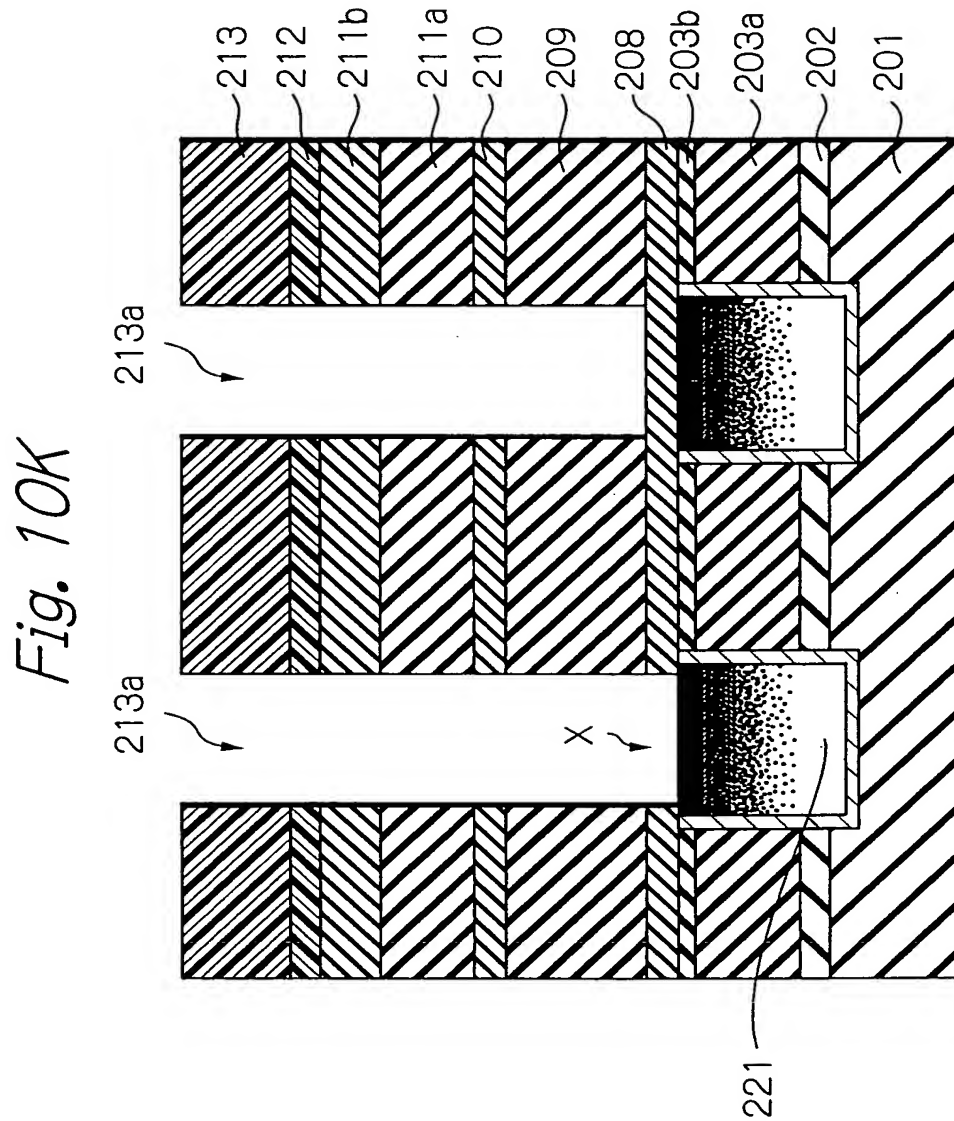
Fig. 10I



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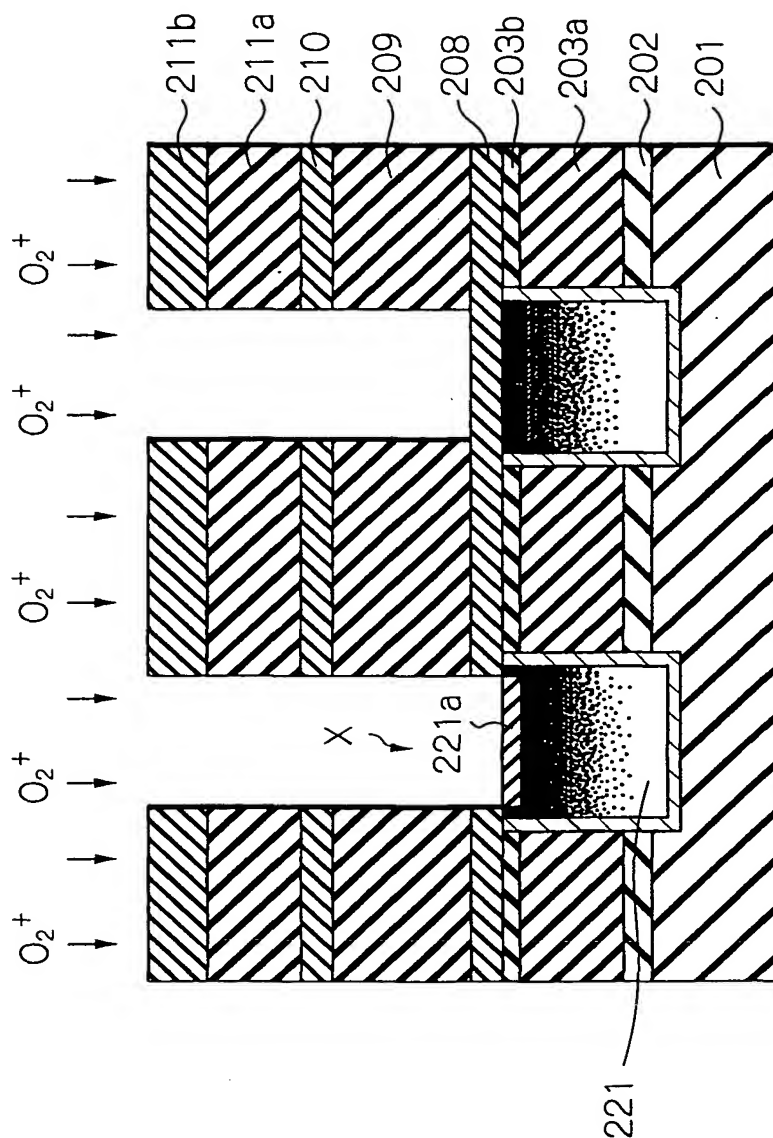


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87

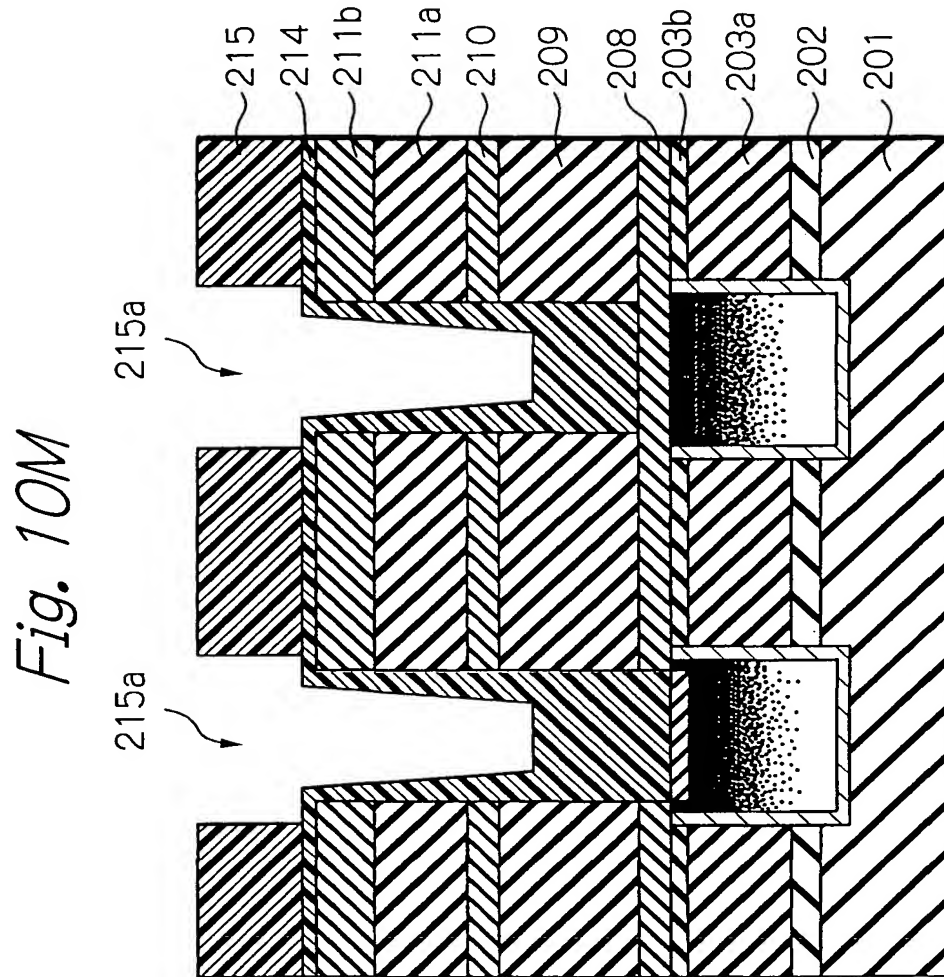


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Fig. 10L

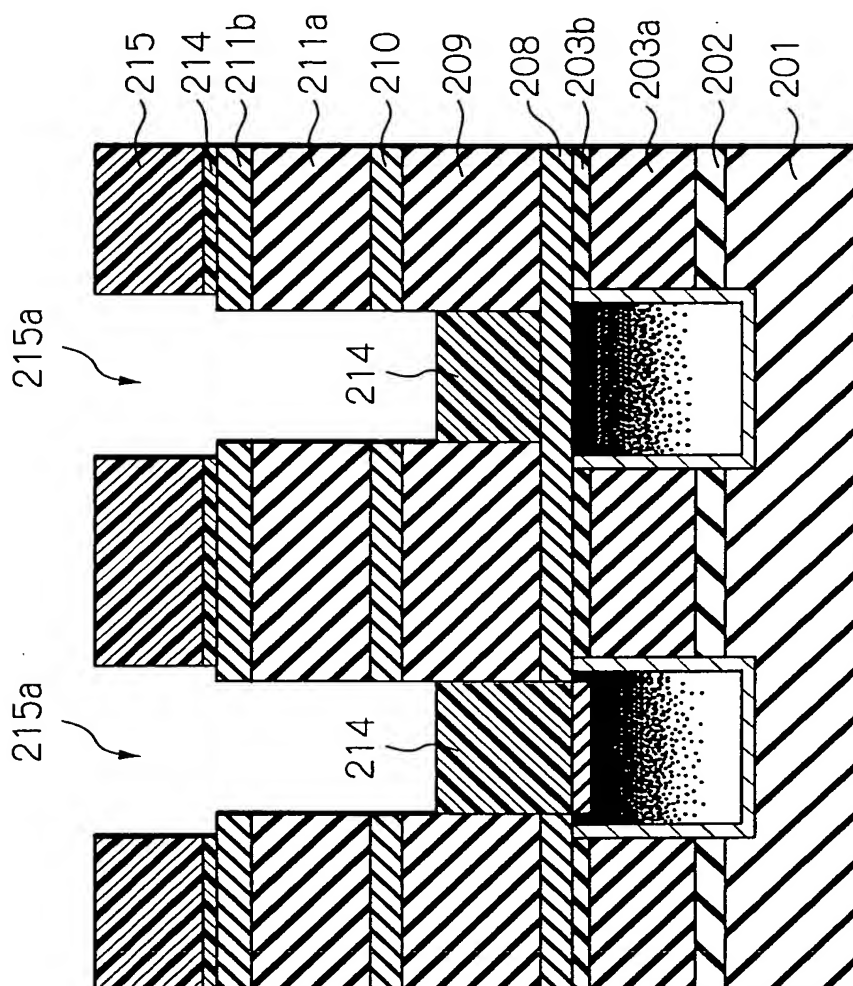


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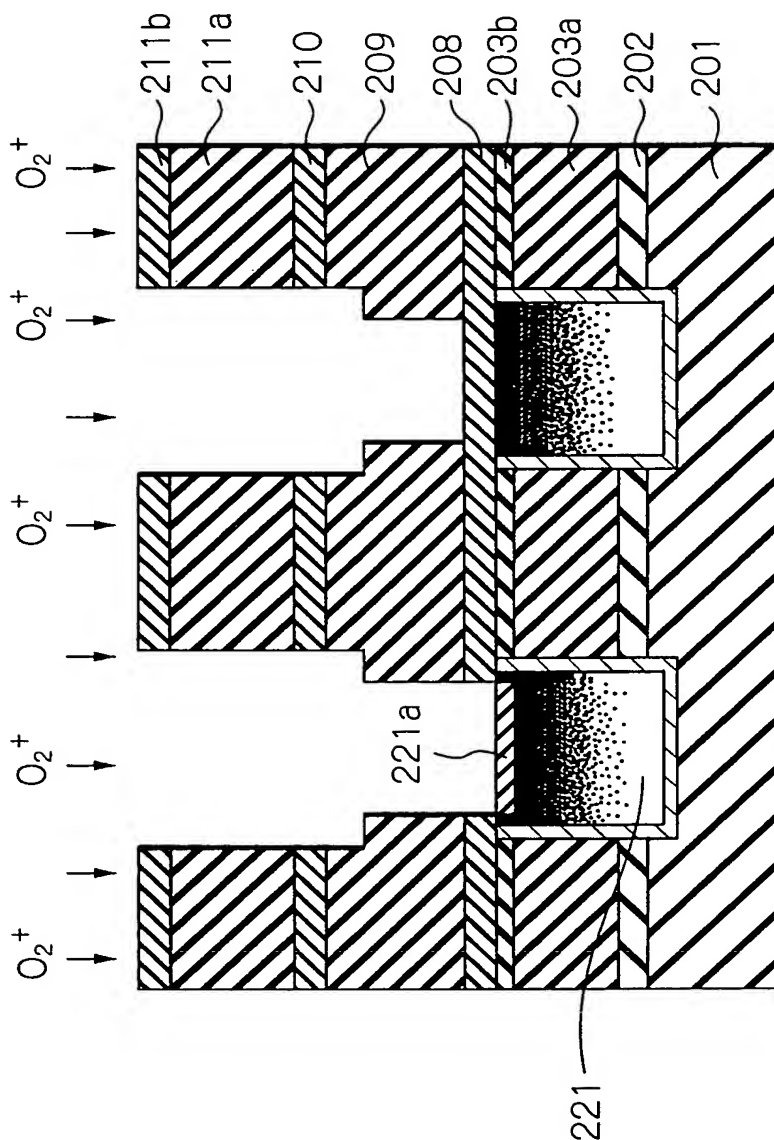
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Fig. 10N



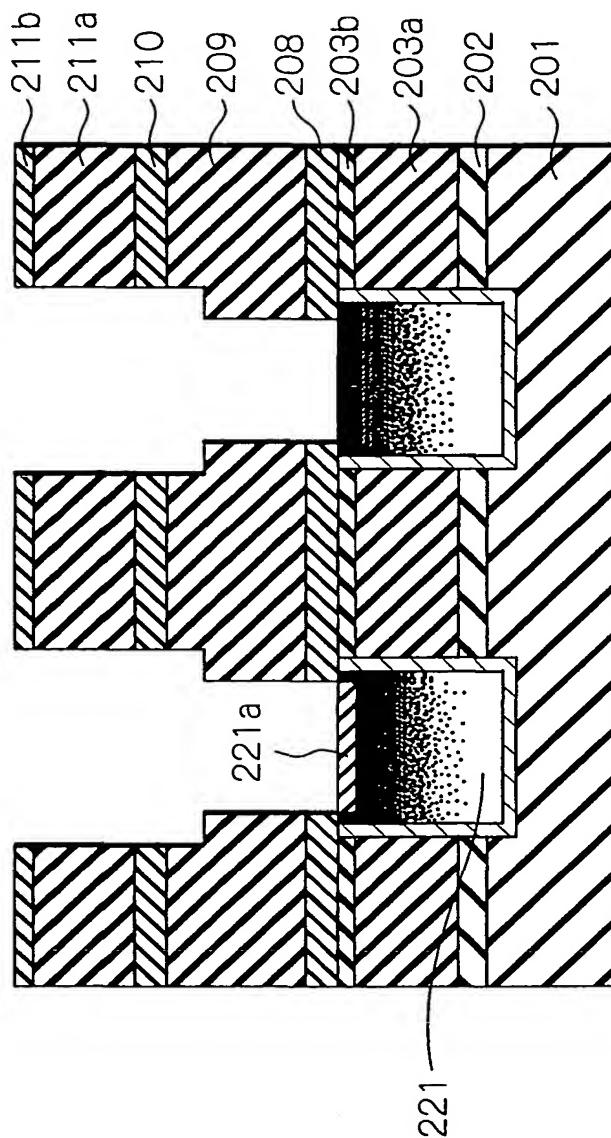
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Fig. 100



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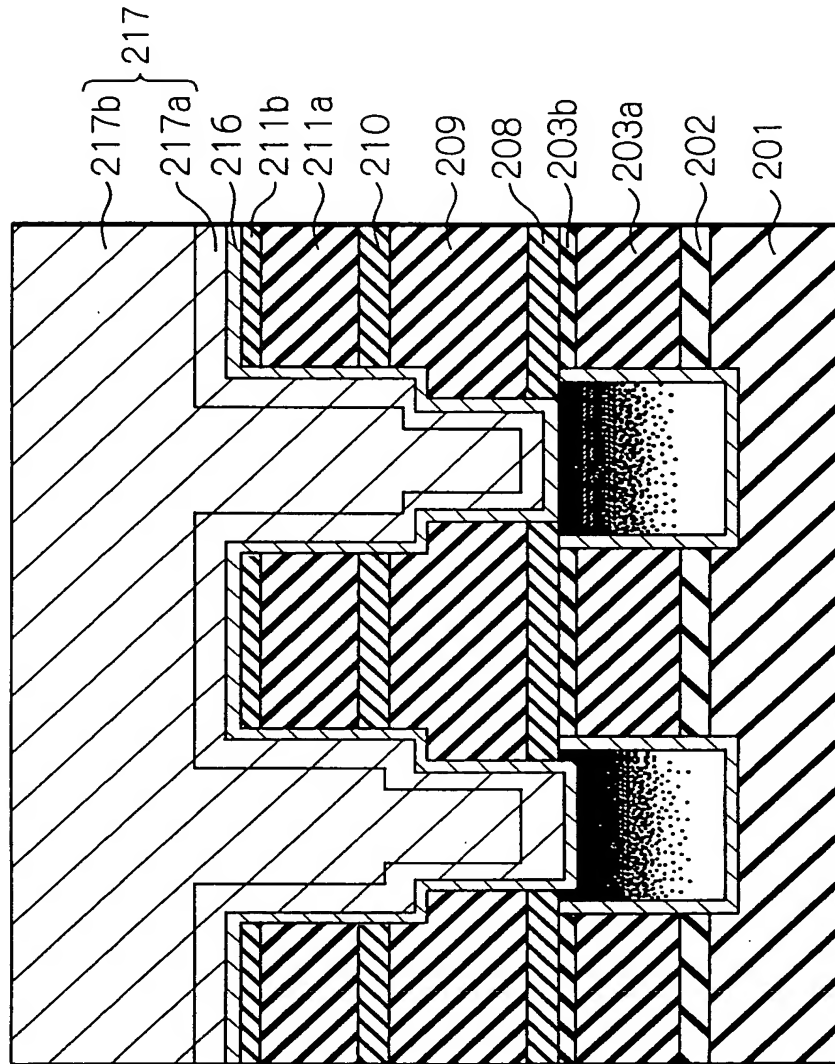
Fig. 10P



This cross-sectional view shows a semiconductor device with a multi-layered structure. The layers are labeled as follows: 201 (bottom layer), 202 (second layer), 203a (third layer), 203b (fourth layer), 208 (fifth layer), 209 (sixth layer), 210 (seventh layer), 211a (eighth layer), and 211b (top layer). The device features a central region with a textured, dotted appearance, likely representing a semiconductor layer or a specific material composition. The layers are stacked vertically, with the top layer (211b) being the thickest. The bottom layer (201) is the thinnest. The layers 202, 203a, 203b, 208, 209, 210, and 211a are shown as thin, uniform layers, while layer 201 is thicker and has a different texture. The layers 202, 203a, 203b, 208, 209, 210, and 211a are stacked on top of each other, while layer 201 is at the bottom. The layers 202, 203a, 203b, 208, 209, 210, and 211a are shown as thin, uniform layers, while layer 201 is thicker and has a different texture. The layers 202, 203a, 203b, 208, 209, 210, and 211a are stacked on top of each other, while layer 201 is at the bottom.

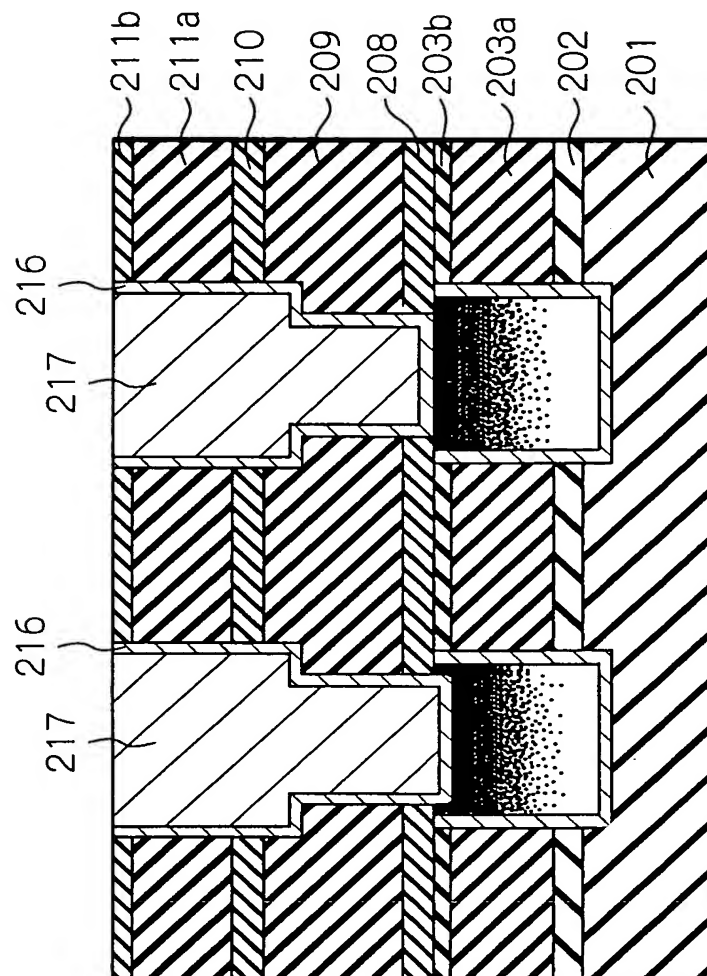
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Fig. 10R



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Fig. 10S

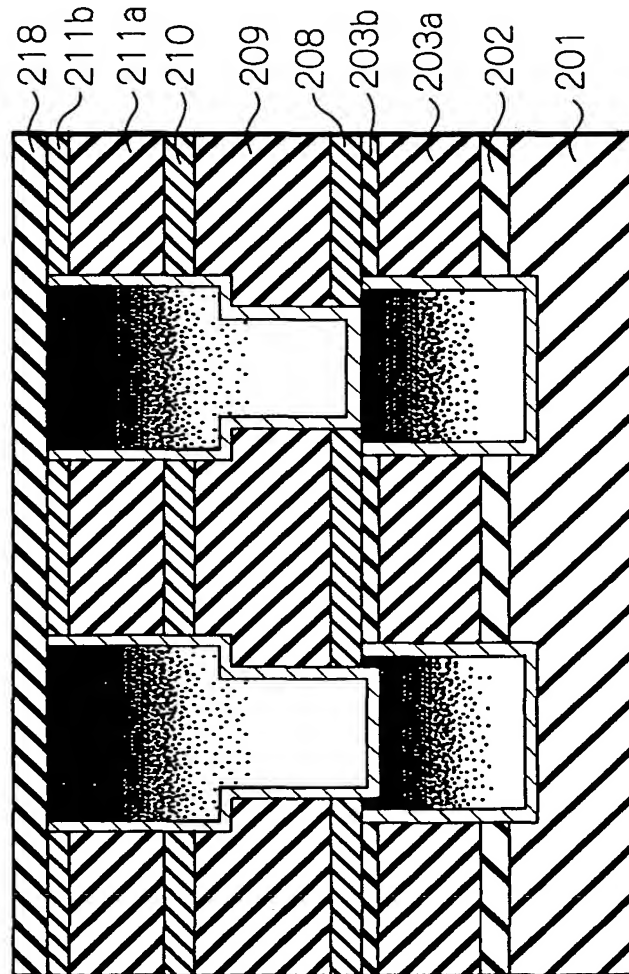


This cross-sectional view shows two identical semiconductor structures. Each structure consists of a substrate 201 with a first layer 202, a second layer 203a, and a third layer 203b. A first conductive layer 208 is formed on the second layer 203a, and a second conductive layer 209 is formed on the third layer 203b. A first insulating layer 210 is formed on the first conductive layer 208, and a second insulating layer 211a is formed on the second conductive layer 209. A first opening 217a is formed in the first insulating layer 210, and a second opening 217b is formed in the second insulating layer 211a. The first opening 217a is filled with a first material 216, and the second opening 217b is filled with a second material 216. The first material 216 is a conductive material, and the second material 216 is an insulating material.

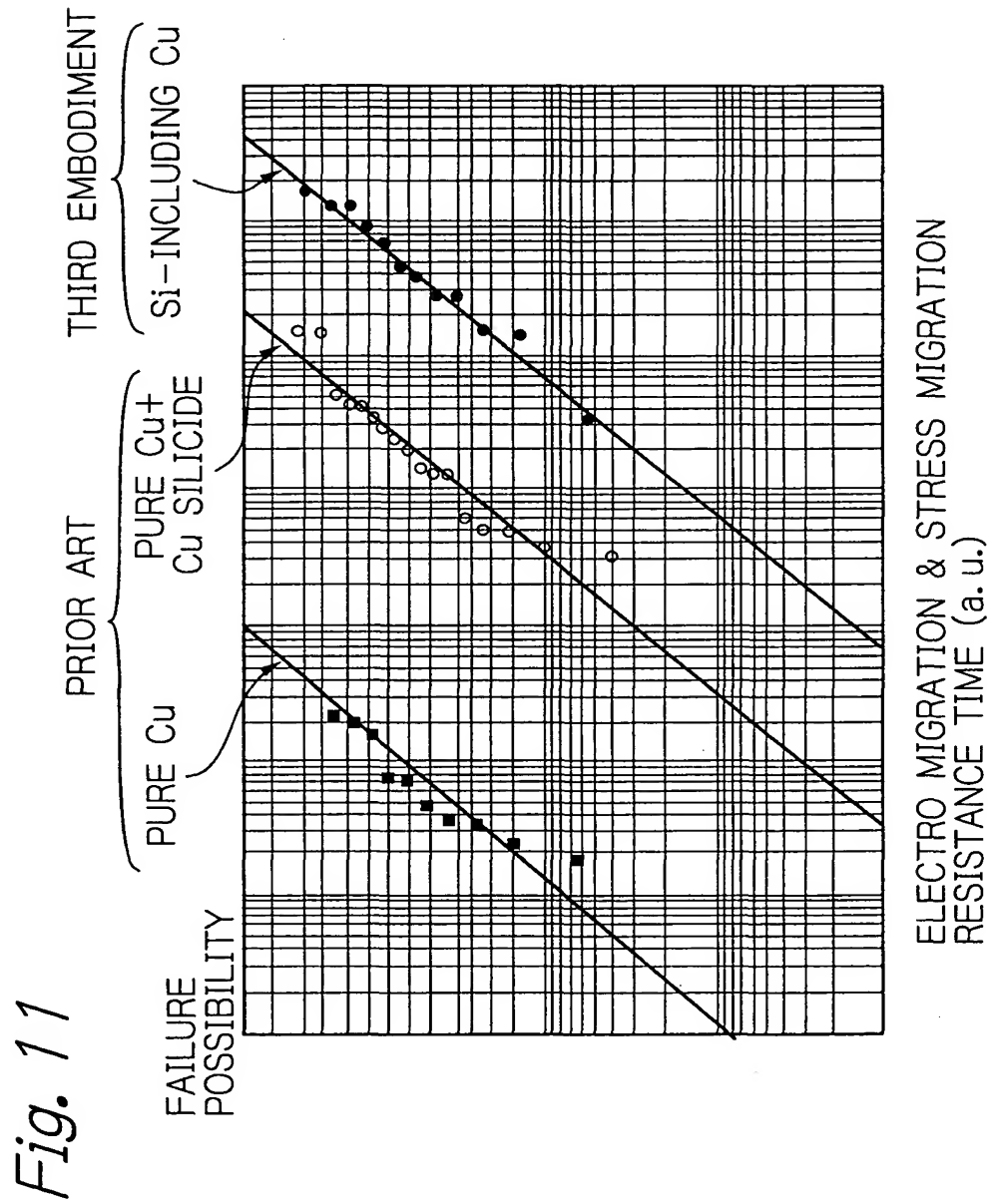
This cross-sectional view shows two gate structures, 216, on a substrate 201. Each gate structure 216 includes a gate stack 211 (comprising 211a and 211b) and a gate spacer 210. The gate stacks 211 are positioned over a channel region 208, which is flanked by source regions 203a and 203b. The source regions 203a and 203b are separated by a drain region 202. The gate spacers 210 are located on the side walls of the gate stacks 211. The substrate 201 is shown with a hatched pattern.

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Fig. 10V

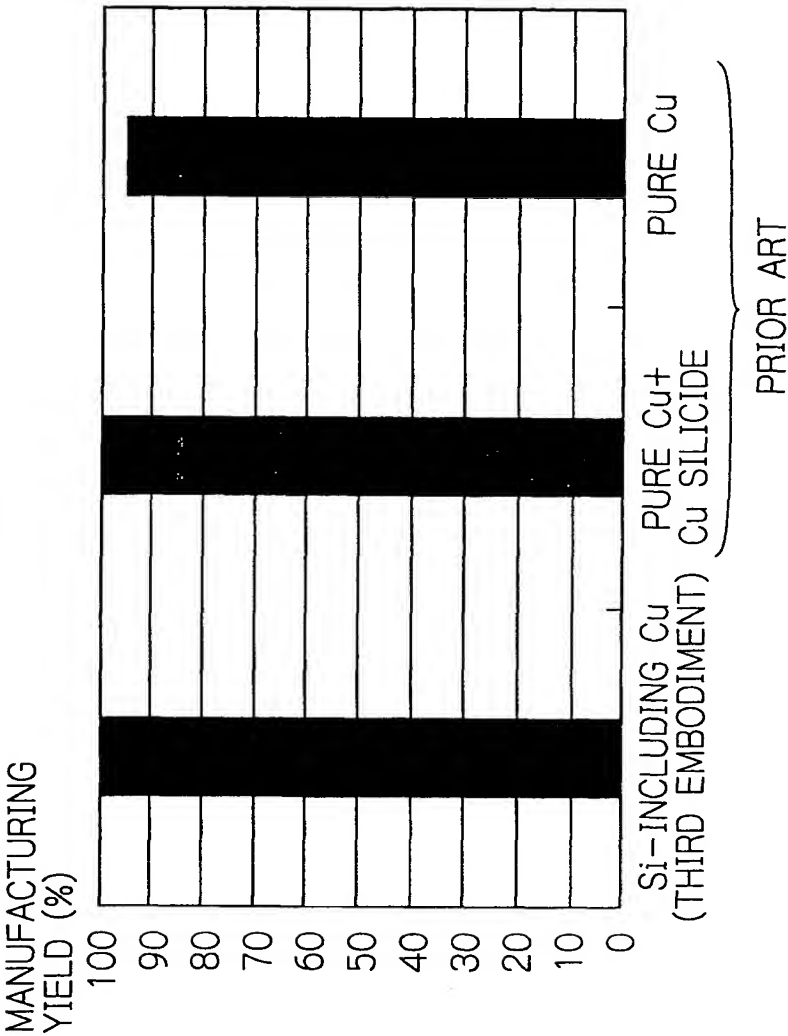


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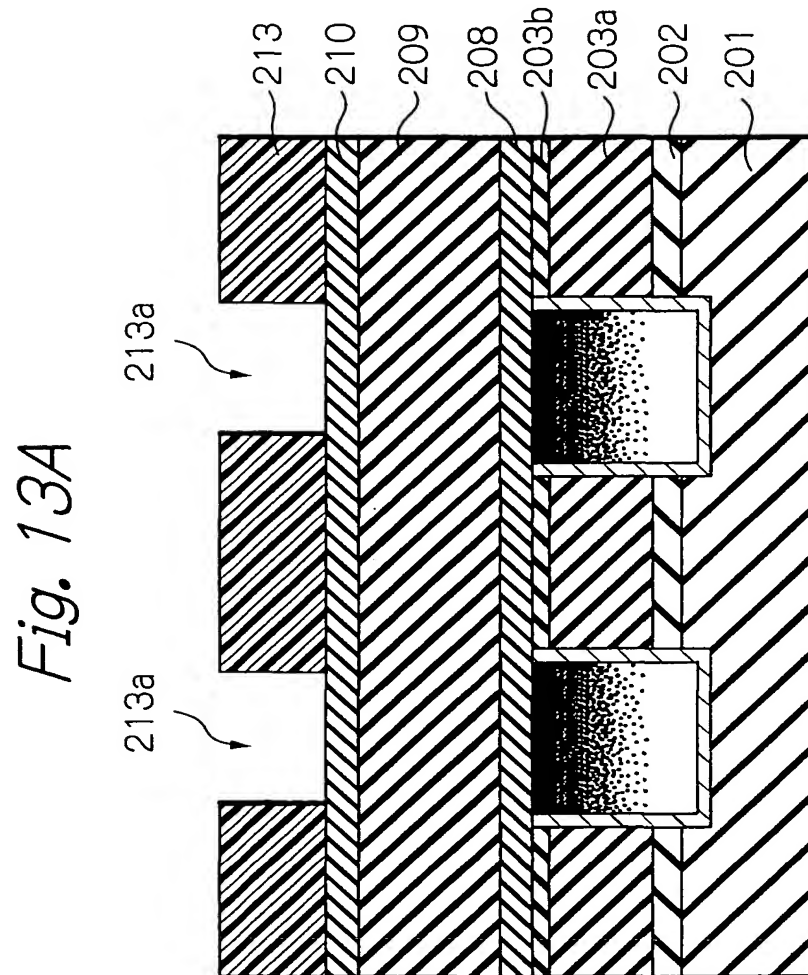


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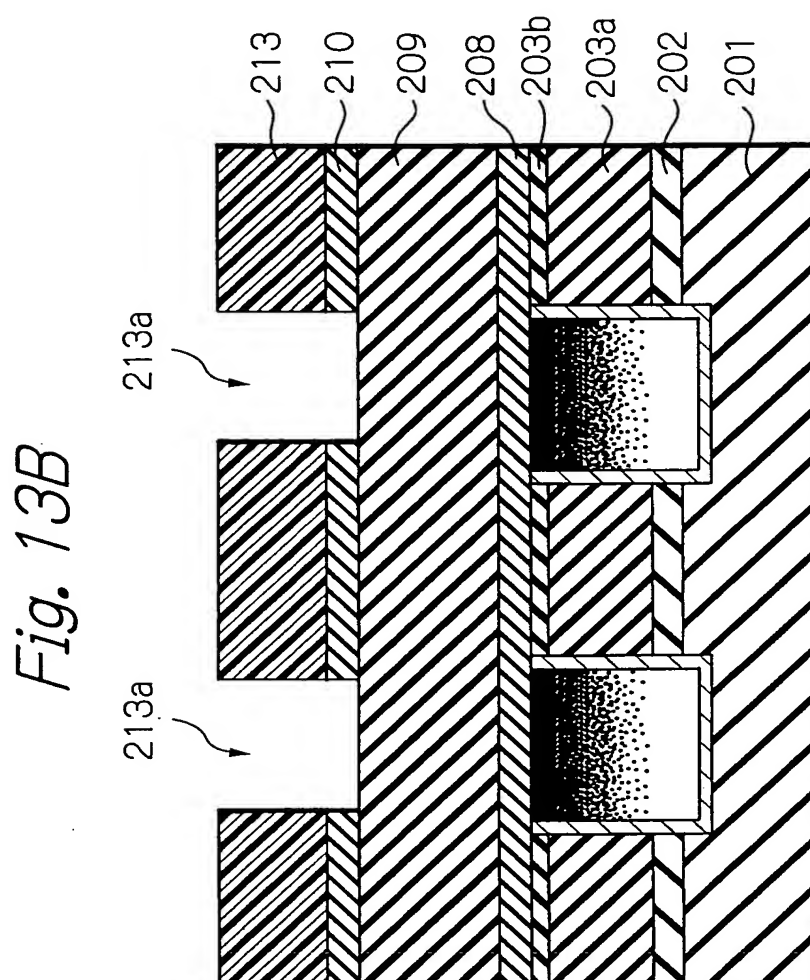
Fig. 12



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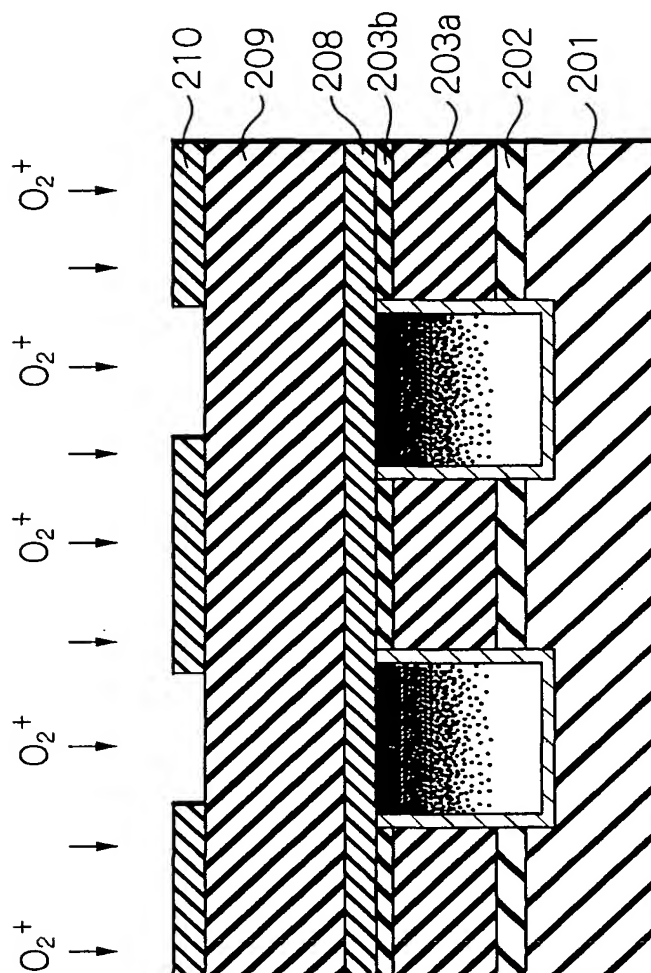


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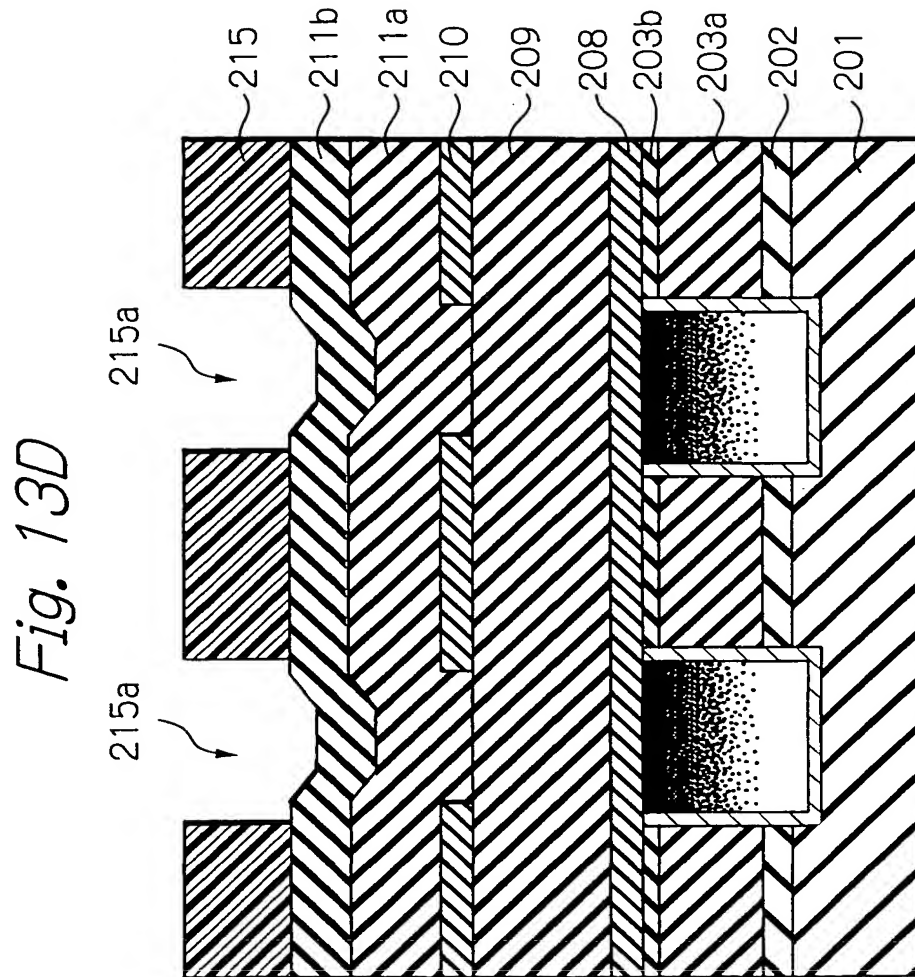


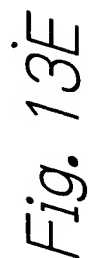
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Fig. 13C



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87

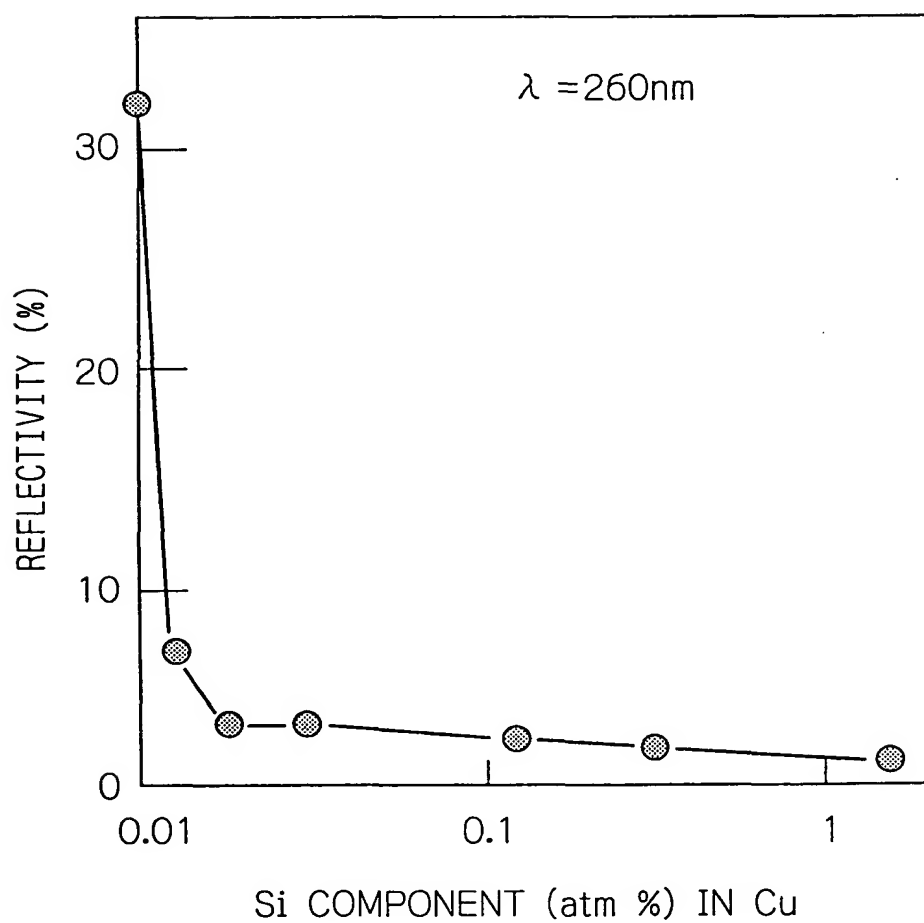




A cross-sectional view of a semiconductor device. The device has a stepped surface with multiple layers. The layers are labeled 201, 202, 203a, 203b, 208, 209, 210, 211a, and 211b. The layers 201, 202, 203a, 203b, 208, 209, 210, 211a, and 211b are shown with different hatching patterns. Two rectangular regions, 221a and 221b, are embedded in the device. Region 221a is located in the middle of the device, and region 221b is located on the right side. Both regions 221a and 221b contain a dense distribution of small dots, representing a doped region. Arrows labeled O_2^+ point towards the surface of the device. A label 'X' with a squiggly arrow points to the interface between layers 209 and 210.

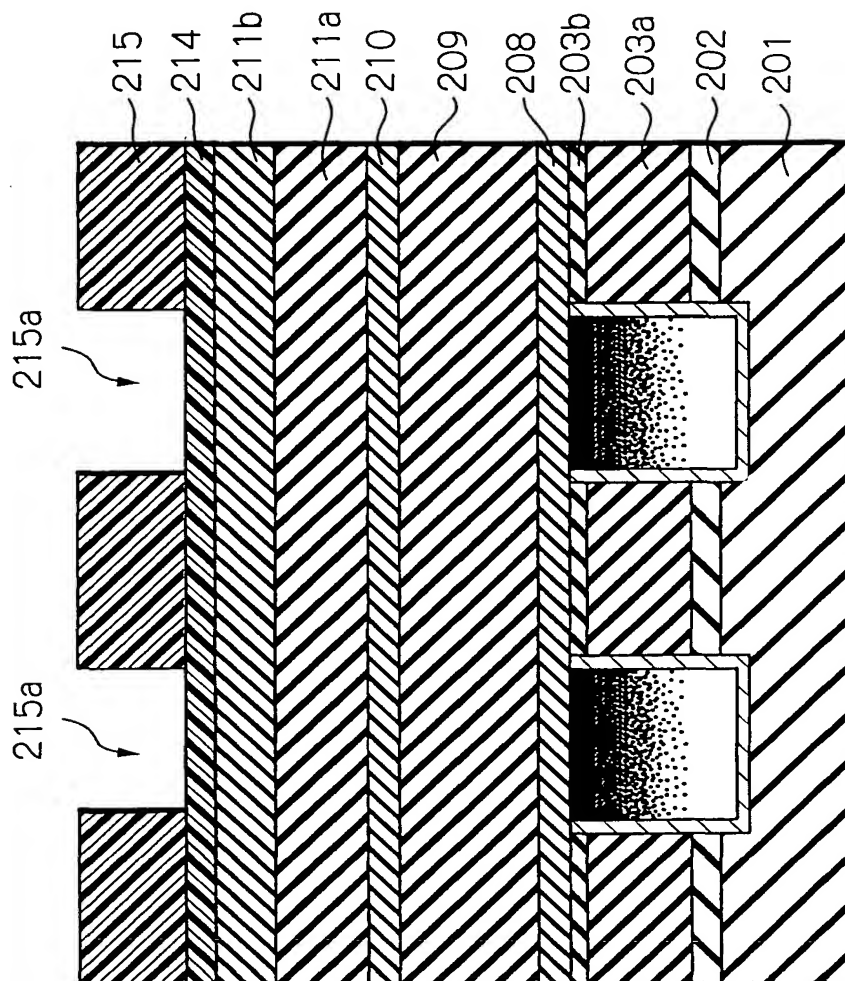
74/
87

Fig. 14



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87

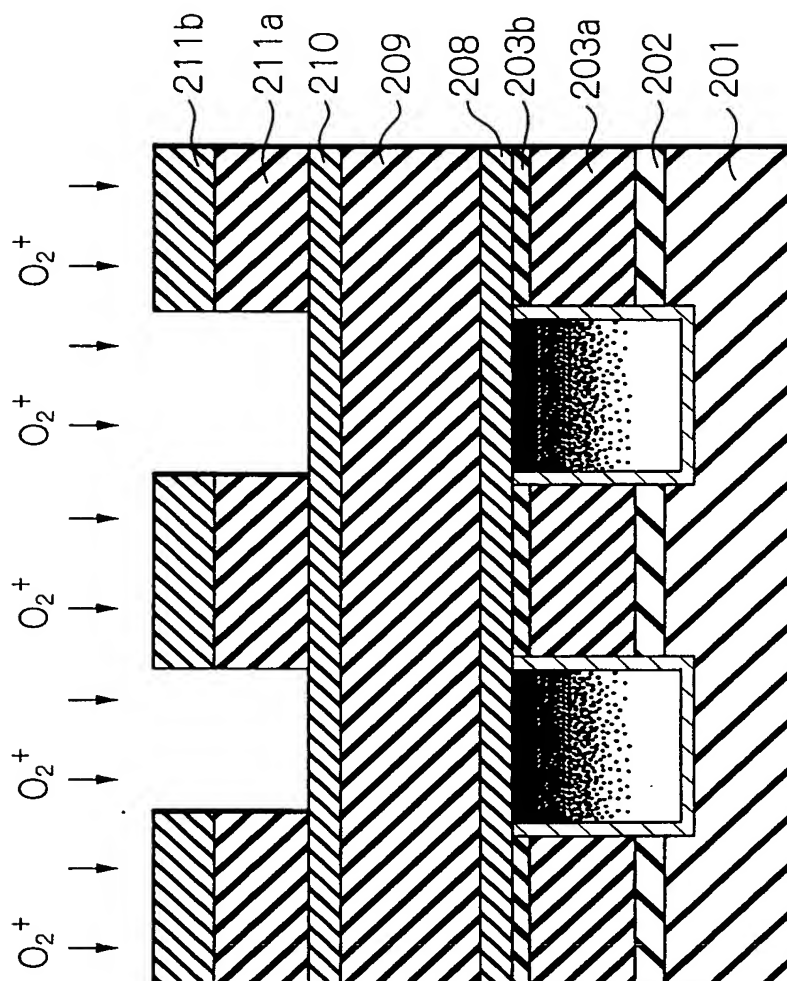
Fig. 15A





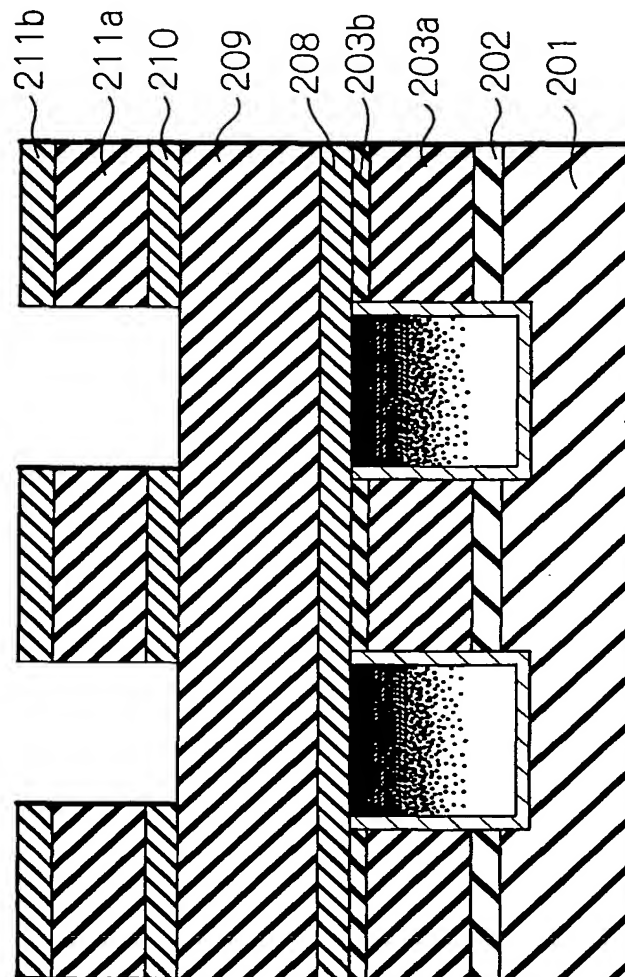
77/
87

Fig. 15C



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87

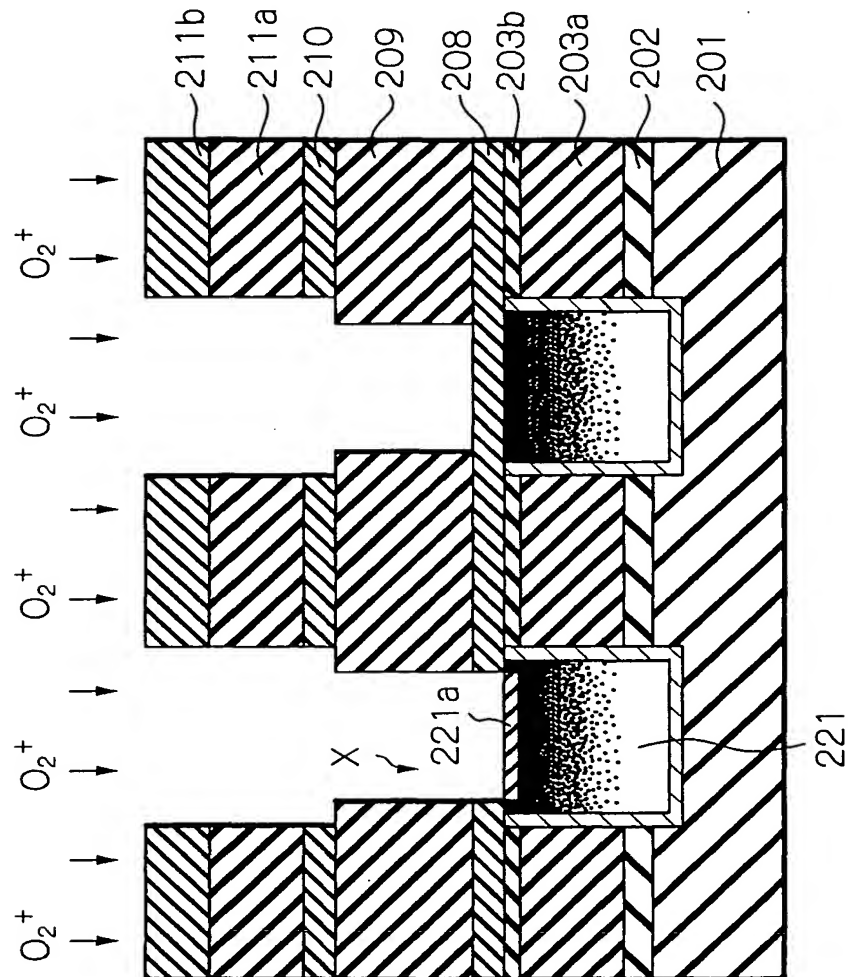
Fig. 15D





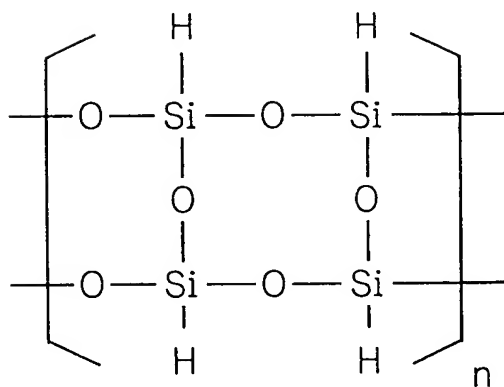
80/
87

Fig. 15F



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Fig. 16A

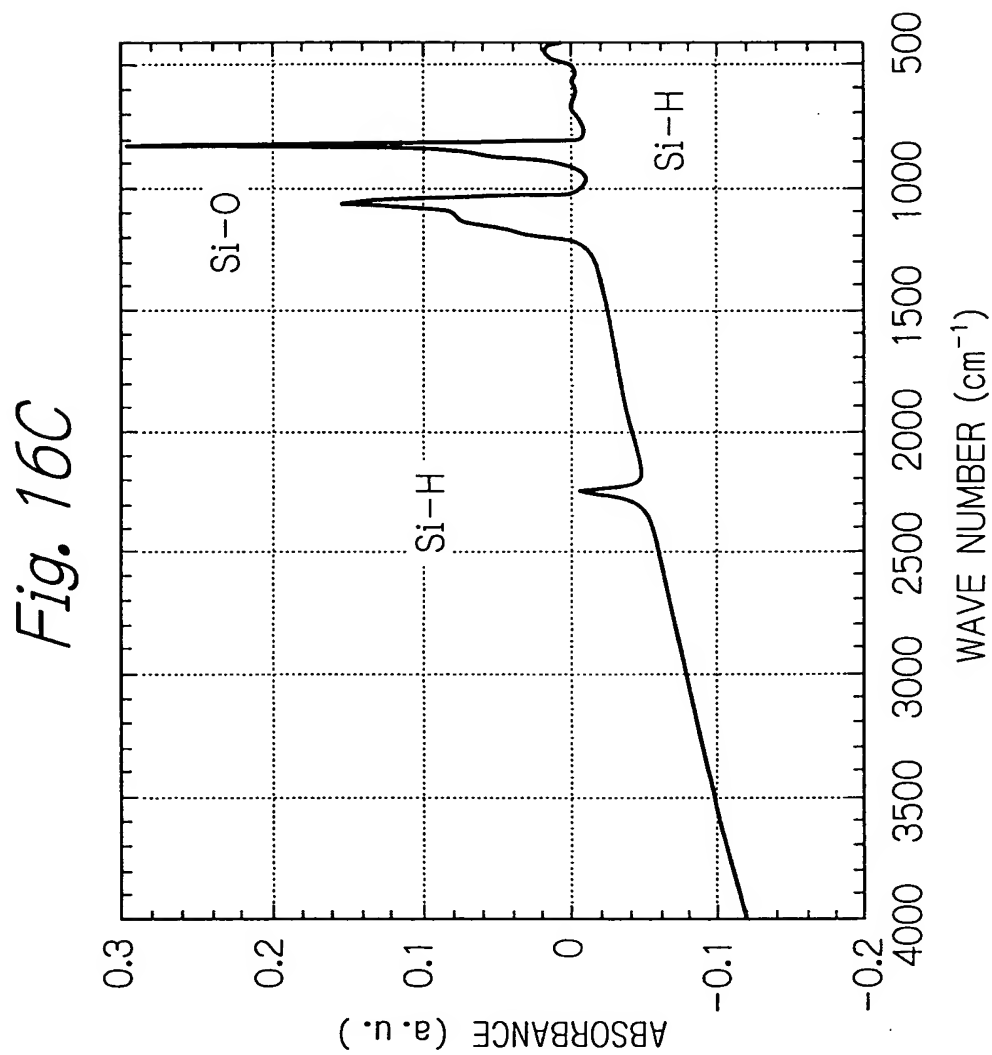


82/
87

Fig. 16B

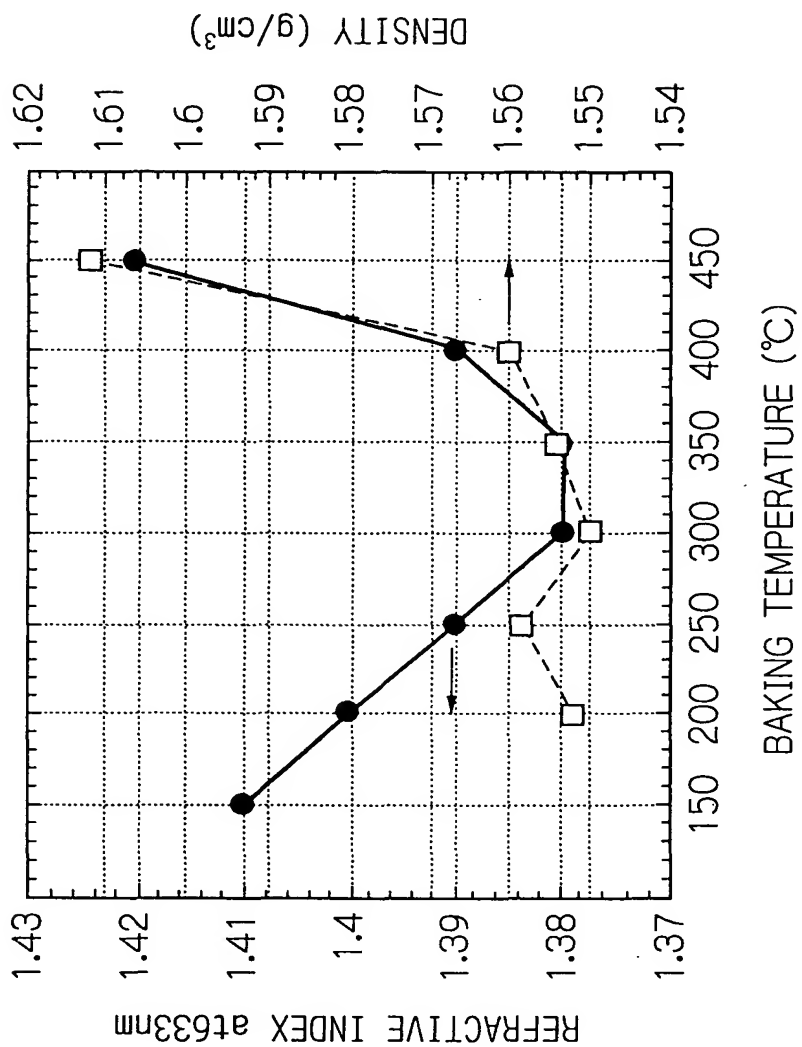
DIELECTRIC CONSTANT	2.9 at 1MHz
REFRACTIVE INDEX	1.39 at 633nm
STRESS	7.00E+08 dyne/cm ²
HARDNESS	0.9 Gpa
SHEAR MODULUS	6 Gpa
THERMAL EXPANSION RATIO	18 ppm/deg-C
GLASS TRANSITION POINT	none
THERMAL CONDUCTIVITY RATIO	0.31 W/mk@25deg-C

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87



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87

Fig. 16D



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Fig. 17

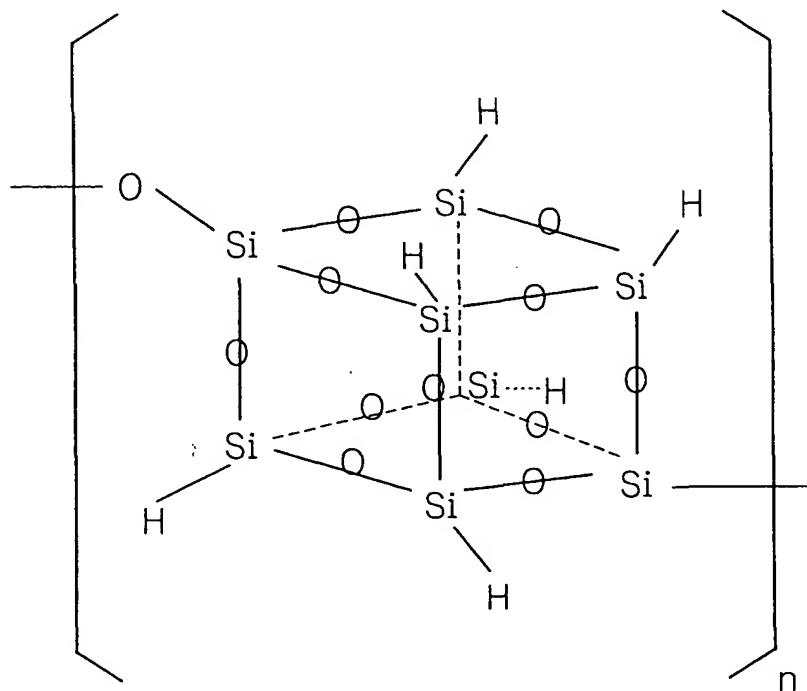
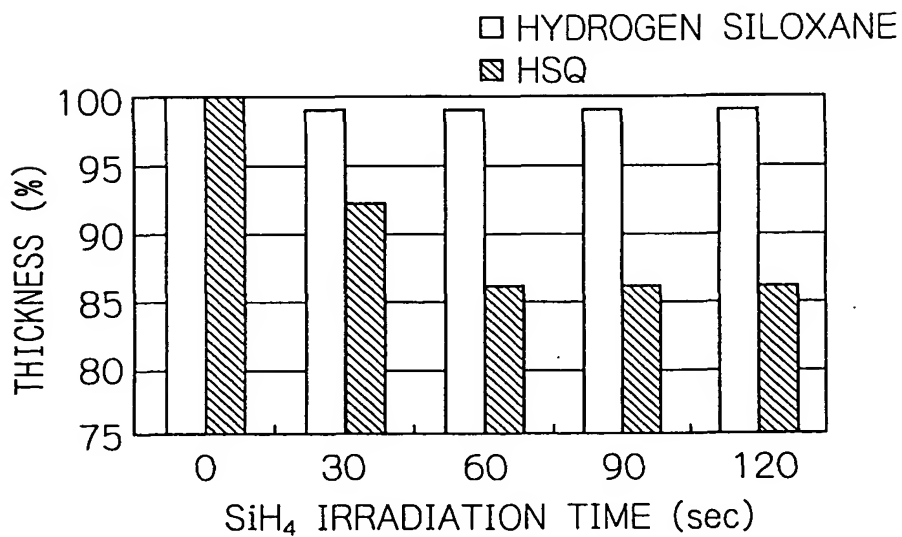


Fig. 18



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Fig. 19

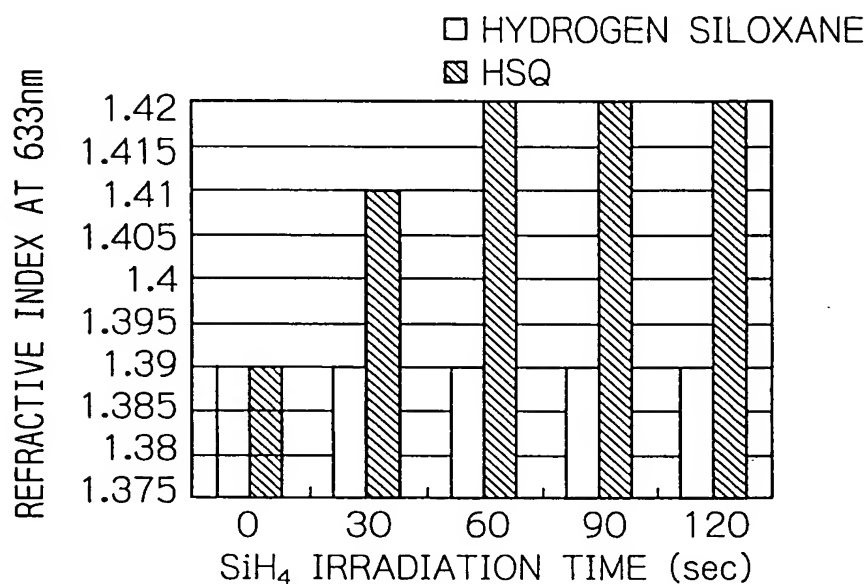
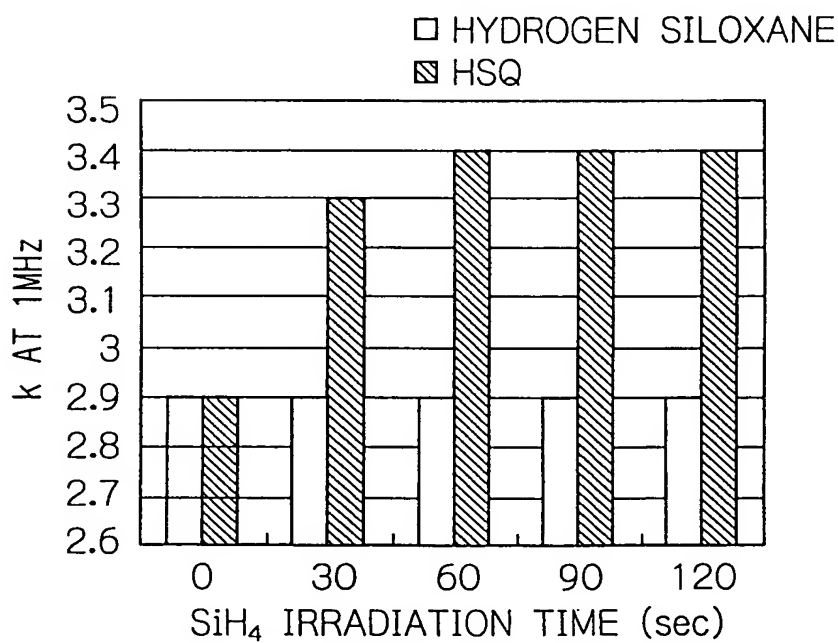


Fig. 20



$\frac{87}{87}$

Fig. 21A

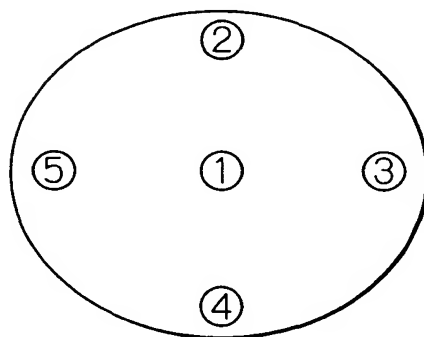


Fig. 21B

	①	②	③	④	⑤
HYDROGEN SILOXANE	957	981	915	922	932
HSQ	1198	1232	1007	1101	1058

(Å)